APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED

AFPTEF REPORT NO. 06-R-04
AFPTEF PROJECT NO. 04-P-104

MARK W. BOALS
Project Engineer
robbin.miller@wpafb.af.mil
DSN 787-73362
Comm (937) 257-3362

SUSAN J. EVANS
Qualification Test Engineer
susan.evans@wpafb.af.mil
DSN 787-7445
Comm (937) 257-7445

Development of the C-17 Nose Radome Container, *CNU-674/E*

AFMC LSO/LOP
AIR FORCE PACKAGING TECHNOLOGY & ENGINEERING FACILITY
WRIGHT PATTERSON AFB, OH 45433-5540
February 27 2006

NOTICE

AFPTEF PROJECT NO. 04-P-104
TITLE: Development of the C-17 Nose Radome Container

ABSTRACT

The Air Force Packaging Technology Engineering Facility (AFPTEF) was tasked with the design of a new shipping and storage container for the C-17 Radome in March of 2004. The new container is designed to replace the wood and fiberglass shell container presently used.

The current containers' lack of mechanical and environmental protection as well as handling issues prompted AFPTEF's design of a new container. The new container will protect the Radome both mechanically and environmentally and make it easier to maneuver during worldwide shipment and storage. The CNU-674/E, designed to SAE ARP1967A, is an aluminum, long-life, controlled breathing, reusable shipping and storage container. The new container passed all qualification tests per ASTM D4169.

The CNU-674/E container will not only meet the users' requirements but will also provide an economic saving for the Air Force. The savings will be thousands of dollars over the twenty-year life span of the container.

Total man-hours: 500

PROJECT ENGINEER:

Mark W. Boals
Mechanical Engineer
AFPTEF

Robbin L. Miller

TEST ENGINEER:

Susan J. Evans
Mechanical Engineer
AFPTEF

Susan J Evans

APPROVED BY:

Robbin L. Miller
Chief, Air Force Packaging
Technology & Engineering Facility

Robbin L. Miller

PUBLICATION DATE:

19 April 2007

TABLE OF CONTENTS

ABSTRACT..i
TABLE OF CONTENTS..ii
INTRODUCTION..1
BACKGROUND..1
REQUIREMENTS..1
DEVELOPMENT..1
DESIGN..1
PROTOTYPE..2
QUALIFICATION TESTING..2
TEST LOAD..3
TEST PLAN..3
ITEM INSTRUMENTATION..3
TEST SEQUENCES..3
TEST CONCLUSIONS..5
FIT & FUNCTION TESTING..6
CONCLUSIONS..6
RECOMMENDATIONS..6
APPENDIX 1: Test Plan..7
APPENDIX 2: Fabrication & Testing Photographs..11
APPENDIX 3: Test Data..17
APPENDIX 4: Test Instrumentation..37
APPENDIX 5: Distribution List..39
APPENDIX 6: Report Documentation..41

INTRODUCTION

BACKGROUND – The C-17 Sustainment group (564 ACSS/GFL) located at Warner Robins AFB requested the Air Force Packaging Technology and Engineering Facility (AFPTEF) develop a long-life aluminum container for the Nose Radome. The container is a replacement for the current wood crate which degrades readily during use and can not be stored outside. The crate provides inadequate protection for the radome. The radome container is one of a family of new AFPTEF container designs to protect C-17 items that are being damaged in the shipping and storage cycle. Containers were also designed for the main landing gear (MLG) axle beams, MLG posts, full MLG assemblies, nose landing gear assembly, heads-up display unit, brake assembly, OBIGGS winch, and fan thrust reversers.

REQUIREMENTS – AFPTEF, Boeing, and Robins AFB personnel agreed upon a list of requirements during initial design discussions. Many of these requirements were not met by the wood container. The requirements are as follows:

- Sealed/controlled-breathing container that protects against varied environmental conditions and weather during either inside or outside shipping and storage
- No loose packing material
- Shock/Vibration limited to 50 Gs
- Reusable and designed for long life (20 years)
- Low maintenance
- Field repairable hardware
- Forklift capabilities

DEVELOPMENT

DESIGN – The C-17 Nose Radome Shipping and Storage Container (CNU-674/E) design meets all the users' requirements. The CNU-674/E is a sealed, welded aluminum, controlled breathing, reusable container. The container is engineered for the physical and environmental protection of the radome during worldwide transportation and storage. The container consists of a low profile base and completely removable cover equipped with the special features listed below. Guide posts keep the cover from swinging into the radome during cover removal and replacement. The base is a one piece skid/double walled base extrusion with 4-way forklift openings, humidity indicator, pressure equalizing valve (1.0 psi pressure/ 1.0 psi vacuum) and desiccant port for easy replacement of desiccant (controls dehumidification). A silicone rubber gasket and quick release cam-over-center latches create a water/air-tight seal at the base-cover interface. Container external dimensions are 107.9 inches in length, 88.6 inches in width, and 55.1 inches in height. Container tare weight is 1056 pounds, and 1463 pounds with a radome in place.

An aluminum cradle system is integrated into the base suspended on four stainless steel helical isolators that provide shock and vibration protection to 50 G's (See Appendix 2, Figures 1 & 2). The radome is attached to the cradle system on the aft end by rotating two clamping mechanisms onto the radome frame and then tightly securing them with quick release pins (see Appendix 2, Figure 3) and on the forward end by letting both radome hooks rest on high density polyethylene (HDPE) lined aluminum blocks and securing using quick release pins (see Appendix 2, Figure 4). These radome attachment points are the same points where the radome attach to the aircraft. The cradle/frame system allows easy loading and unloading of the radome into the container.

RADOME CONTAINER FEATURES	
Pressure Equalizing Valve	1
Humidity Indicator	1
Desiccant Port	1
Document Receptacle	1
Forkliftable	Yes
Cover Latches	18
Cover Lift Handles	None
Cover Lift Rings	2
Cover Tether Rings	None
Base Lift Handles	None
Base Tie-down Rings	8
Stacking Capability	Yes

PROTOTYPE – AFPTEF fabricated one CNU-674/E prototype container in house for testing. The prototype container was fabricated in accordance with (IAW) all requirements and tolerances of the container drawing package. The drawing package used for prototype fabrication has been released for the manufacture of production quantities of the container. Each face of the container was uniquely identified for testing identification as shown below.

DESIGNATED SIDE	CONTAINER FEATURE
Top	Cover Top
Aft	Desiccant Port
Right	Right Side from Aft
Left	Left Side from Aft
Forward	Opposite Aft
Bottom	Base Bottom

Initial testing resulted in high frequency (500 – 1000 + Hz) "ringing" due to container noise amplification by the radome. This ringing prevented accurate measurement of shock levels. The container cover walls and bottom and top sheets were lined with 1-inch thick, 2-lb density polyethylene foam to absorb sound waves. This not only reduced the ringing to determine accurate shock levels and amplitudes but will also protect the radome of any possible damaging high frequency sound waves.

QUALIFICATION TESTING

TEST LOAD – The test load was an actual serviceable radome. A triaxial accelerometer, used to record actual accelerations sustained by the radome, was mounted on the test load as close to the center of mass as possible. The test load weight was 408 lbs.

TEST PLAN – The radome container was tested in accordance with the Air Force Packaging Technology & Engineering Facility (AFPTEF) standard long life container test plan (See Appendix 1). The test plan referenced ASTM D 4169 and SAE ARP 1967. The test methods specified in this test plan constituted the procedure for performing the tests on the radome container. The performance criteria for evaluation of the container acceptability was specified at 50 Gs maximum and an initial and final leak rate of 0.34 kPa (0.05 psi) per hour at 6.9 kPa (1.0 psi). These tests are commonly applied to special shipping containers providing rough handling protection to sensitive items. The tests were performed at AFPTEF, AFMC LSO/LOP, 5215 Thurlow St, Wright-Patterson AFB, OH 45433-5540.

ITEM INSTRUMENTATION – The test load was instrumented with a piezoelectric triaxial accelerometer mounted as close as possible to the radome's center of mass. Accelerometer positive axis orientations were as follows:

> X Axis - Directed through container Forward and Aft sides (Longitudinal motion).
> Y Axis - Directed through container Left and Right sides (Transverse motion).
> Z Axis - Directed through container Top and Bottom (Vertical motion).

See Appendix 4 for detailed accelerometer and other instrumentation information.

TEST SEQUENCES – Note: All test sequences were performed at ambient temperature and humidity, unless otherwise noted in the test procedure.

TEST SEQUENCE 1 – Leak Test

Procedure – The desiccant port cover was removed and replaced with a port cover modified for attachment of the digital manometer and vacuum/pressure pump lines. The container was closed and sealed. The pneumatic pressure leak technique was used to pressurize the container to minimum test pressure of 6.9 kPa (1.0 psi). Maximum allowable leak rate is 0.34 kPa (0.05 psi) per hour. (See Appendix 2, Figure 5)

Results – The container passed the leak test with a leak rate less than the maximum allowed rate of 0.34 kPa (0.05 psi) per hour.

TEST SEQUENCE 2 – *Vibration Test, Resonance Dwell*

Procedure – The container was rigidly attached to the vibration platform (Appendix 2, Figure 6). A sinusoidal vibration excitation was applied in the vertical direction and cyclically swept for 7.5 minutes at 2 minutes per octave to locate the resonant frequency. Input vibration from 5 to 12.5 Hz was at 0.125-inch double amplitude. Input vibration from 12.5 to 50.0 Hz was at 1.0 G (0 to peak). The peak transmissibility values during the up and down frequency sweeps were noted for use in determining the frequency search range for the resonance dwell test.

Acceleration pulses were recorded to determine the maximum accelerations sustained by the packaged item. All signals were electronically filtered using a two-pole Butterworth filter with a 600 Hz cutoff frequency.

The vibration controller swept up the frequency range until the resonant frequency was reached. The controller locked onto and tracked this frequency for the 30 minute resonance dwell test. The resonant frequency and corresponding transmissibility at 5 minute, 15 minutes and 30 minutes into the test were recorded. The test was conducted at ambient temperature.

Results – The initial resonant frequency of the container was 11.3 Hz. The controller was manually locked onto this frequency, and a manually controlled check for a change in the resonant frequency was performed every 10 minutes for the duration of the 30 minute resonance dwell test. During this period, the resonant frequency shifted to 11 Hz, and returned to 11.3 Hz; the average transmissibility of the container and cradle/shock mount system was 3.3. This is lower than the maximum allowable transmissibility, 5, when the resonant frequency is less than 15 Hz (See Appendix 3, Table 2 and Resonance Dwell Graphs). The container met the test requirements.

TEST SEQUENCE 3 – *Loose Load Vibration, Repetitive Shock*

Procedure – A sheet of 3/4-inch plywood was bolted to the top of the vibration table, and the container was placed on the plywood. Restraints were used to prevent the container from sliding off the table. The container was allowed approximately 1/2-inch unrestricted movement in the horizontal direction from the centered position on the table (Appendix 2, Figure 7).

The table frequency was increased from 3.5 Hertz (Hz) until the container left the table surface (approximately 3.9 Hz). At one-inch double amplitude, a 1/16-inch-thick flat metal feeler could be slid freely between the table top and the container under all points of the container. Repetitive shock testing was conducted for 2 hours at ambient temperature.

Results – The loaded container was vibrated at 4.17 Hz for 2 hours. The maximum G level (vertical axis) measured during this time was 2.6. At the end of testing there was no visible damage to the either the container or the item. The container met the test requirements. (Appendix 3, Repetitive Shock Graphs)

TEST SEQUENCE 4 – Rotational Drops

Procedure – An Assurance Level I drop height of 305 mm (12 in.) was used to perform four corner and four edge drops onto a one-inch thick steel plate, the impact levels were recorded. The maximum allowed impact level for the radome was 50 Gs. (See Appendix 2, Figure 8)

Results – There was no noticeable damage to either the container or item. The maximum recorded (resultant) impacts ranged from 23 Gs to 39 Gs, well below the item fragility of 50 Gs. The maximum G-level measurements in the vertical axis were recorded from 5 to 20 Gs higher than what the true levels were, due to the ringing (described above). Since the results were still below the acceptable level, the test was not repeated. (See Appendix 3, Table 1 and Corner and Edge Drop Graphs). The container met the test requirements.

TEST SEQUENCE 5 – Lateral Impact (Pendulum Impact)

Procedure – The container impact velocity was 2.13 m/sec. Each of the four container sides was impacted one time. (See Appendix 2, Figure 9)

Results – No noticeable damage occurred to the container or item. The item did not make contact with any interior container surfaces during testing. The maximum recorded (resultant) impacts ranged from 14 Gs to 27 Gs (See Appendix 3, Table 1 and Lateral Impact Graphs), well below the item fragility of 50 Gs. The maximum G-level measurements in the vertical axis were recorded from 5 to 20 Gs higher than what the true levels were, due to the ringing (described above). Since the results were still below the acceptable level, the test was not repeated. The container met the test requirements.

TEST SEQUENCE 6 – Leak Test

Procedure – Test Sequence 1 was repeated.

Results – The container passed the leak test with a leak rate less than the maximum allowed rate of 0.34 kPa (0.05 psi) per hour.

TEST CONCLUSIONS – No damage occurred during the above testing to either the container, mounting system or test item. There was no evidence of any contact on impact between the radome and the container walls or cover. All impact levels are well below the item fragility limit of 50 Gs. Therefore, the container and mounting system do provide adequate protection for the radome.

FIT & FUNCTION TESTING

Fit and function testing was completed on site at AFPTEF with the radome that was supplied for prototype testing.

CONCLUSIONS

No damage occurred during the above testing to the container, mounting system or test item. There was no evidence of any contact on impact between the radome and the container walls or cover. All impact levels are well below the item fragility limit of 50 Gs. The CNU-674/E aluminum container was accepted by the users. The container met all the user's requirements. The container can protect a radome during world-wide transportation and storage and will save the Air Force hundreds of thousands of dollars in O&M costs.

RECOMMENDATIONS

AFPTEF recommends that new containers be procured and delivered to avoid damage to radomes, thus mitigating overall shipping risks. All wood crates for the radomes should be replaced.

APPENDIX 1: Test Plan

AF PACKAGING TECHNOLOGY AND ENGINEERING FACILITY (Container Test Plan)					AFPTEF PROJECT NUMBER: 04-P-104	
CONTAINER SIZE (L x W x D) (MILLIMETERS) INTERIOR: 2650 X 2160 X 1227	EXTERIOR: 2740 X 2250 X 1400	WEIGHT (Kgs) GROSS: 479	ITEM: 185	CUBE (CU.M) 8.6	QUANTITY: 1	DATE: 5 Nov 04
ITEM NAME: C-17 Nose Radome				MANUFACTURER:		
CONTAINER NAME: C-17 Nose Radome Reusable Shipping & Storage Container					CONTAINER COST:	
PACK DESCRIPTION: Extruded Aluminum Cntr., Aluminum Cradle, Helical Isolators, Test Load of a C-17 Nose Radome						
CONDITIONING: As noted below						

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRU-MENTATION
		NOTE No damage to contents is acceptable and Package must be in serviceable condition. Serviceable means remains sealed, with no deformities, etc.		
		Quality Conformance Tests		
1.	**Examination of Product.** **SAE ARP 1967 Par. 4.5.1 Table I**	Container shall be carefully examined to determine conformance with material, workmanship, and requirements as specified in Table and drawings.	Ambient temp.	Visual Inspection (VI)
2.	**Weight Test.** **SAE ARP 1967 Par. 4.5.8.3.7**	Container shall be weighed.	Ambient temp.	Scale
		Performance Tests		
3.	**Leak Test.** **SAE ARP 1967 Par. 4.5.2**	Pneumatic pressure at 10.3 kPA (1.5 psi) and vacuum retention at -10.3 kPA (1.5 psi). After temperature stabilization, pressure drop shall not exceed 0.35kPA (0.05 psi) per hour. Test shall last a minimum of 30 minutes.	Ambient temp.	Water Manometer (WM) or Pressure Transducer (PT)

COMMENTS:	
PREPARED BY: Mark W. Boals, Mechanical Engineer	APPROVED BY: Robbin L. Miller, Chief AFPTEF

PAGE 1 OF 3

AF PACKAGING TECHNOLOGY AND ENGINEERING FACILITY (Container Test Plan)

AF PACKAGING TECHNOLOGY AND ENGINEERING FACILITY (Container Test Plan)					AFPTEF PROJECT NUMBER: 04-P-104	
CONTAINER SIZE (L x W x D) (MILLIMETERS) INTERIOR: 2650 X 2160 X 1227	EXTERIOR: 2740 X 2250 X 1400	WEIGHT (Kgs) GROSS: 479	ITEM: 185	CUBE (CU. M) 8.6	QUANTITY: 1	DATE: 5 Nov 04
ITEM NAME: C-17 Nose Radome				MANUFACTURER:		
CONTAINER NAME: C-17 Nose Radome Reusable Shipping & Storage Container					CONTAINER COST:	
PACK DESCRIPTION: Extruded Aluminum Cntr., Aluminum Cradle, Helical Isolators, Test Load of a C-17 Nose Radome						
CONDITIONING: As noted below						

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRU-MENTATION
4.	**Vibration Test.**			
a.	**SAE ARP 1967 Par. 4.5.5 ASTM D 4169 ASTM D 999**	The container shall be vibrated from 5 Hz to 50 Hz at a sweep rate of one half octave per minute with a total sweep time of 7.5 minutes. Container shall then be vibrated for 30 minutes at the predominant resonance. Input excitation shall be 0.125 in double amplitude or 1 G limits.	Ambient temp. Rigidly attach container to exciter	VI Tri-axial Accelerometer
b.	**SAE ARP 1967 Par. 4.5.5 ASTM D 4169 ASTM D 999**	Container shall be vibrated IAW ASTM D 4169, Method D 999 for not less that two hours.	Ambient temp. Blocking shall be used to keep cntr. in place, do not restrict vertical or rotational movement	VI Tri-axial Accelerometer
5.	**Rotational Drop Tests (Ambient Temperature).**			
	SAE ARP 1967 Par. 4.5.3 ASTM D 4169 ASTM D 6179 Methods A&B	Drop height shall be 305mm (12"). Item shall not sustain more than 50G's.	Ambient temp. One drop on all bottom corners (4 drops) and one drop on all edges (4 drops).	VI Tri-axial Accelerometer
6.	**Lateral Impact Test (Ambient Temperature).**			
	SAE ARP 1967 Par. 4.5.6 ASTM D 4169 ASTM D 880 Procedure B	Impact velocity 2.23 m/sec. (7.3 ft/s). Item shall not sustain more than 50G's.	Ambient temp. One impact on each end and one on each side (4 impacts).	VI Tri-axial Accelerometer

COMMENTS:	
PREPARED BY: Mark W. Boals, Mechanical Engineer	APPROVED BY: Robbin L. Miller, Chief AFPTEF

PAGE 2 OF 3

AF PACKAGING TECHNOLOGY AND ENGINEERING FACILITY (Container Test Plan)

AFPTEF PROJECT NUMBER: 04-P-104

CONTAINER SIZE (L x W x D) (MILLIMETERS) INTERIOR:	EXTERIOR:	WEIGHT (Kgs) GROSS:	ITEM:	CUBE (CU. M)	QUANTITY:	DATE:
2650 X 2160 X 1227	2740 X 2250 X 1400	479	185	8.6	1	5 Nove 04

ITEM NAME: C-17 Nose Radome

MANUFACTURER:

CONTAINER NAME: C-17 Nose Radome Reusable Shipping & Storage Container

CONTAINER COST:

PACK DESCRIPTION: Extruded Aluminum Cntr., Aluminum Cradle, Helical Isolators, Test Load of a C-17 Nose radome

CONDITIONING: As noted below

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRU-MENTATION
7.	**Leak Test.** **SAE ARP 1967 Par. 4.5.2**	Pneumatic pressure at 10.3 kPA (1.5 psi) and vacuum retention at -10.3 kPA (1.5 psi). After temperature stabilization, pressure drop shall not exceed 0.35 kPA (0.05 psi) per hour. Test shall last a minimum of 30 minutes.	Ambient temp.	Water Manometer (WM) or Pressure Transducer (PT)

COMMENTS:

PREPARED BY: Mark W. Boals, Mechanical Engineer

APPROVED BY: Robbin L. Miller, Chief AFPTEF

PAGE 3 OF 3

APPENDIX 2: Fabrication & Testing Photographs

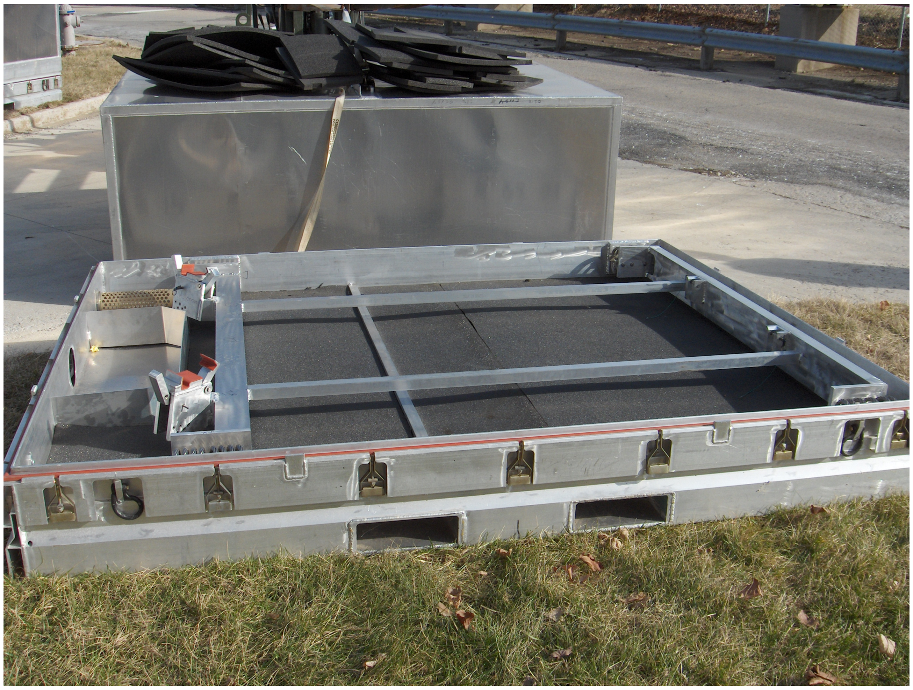


Figure 1. Container w/Cover removed showing Cradle System

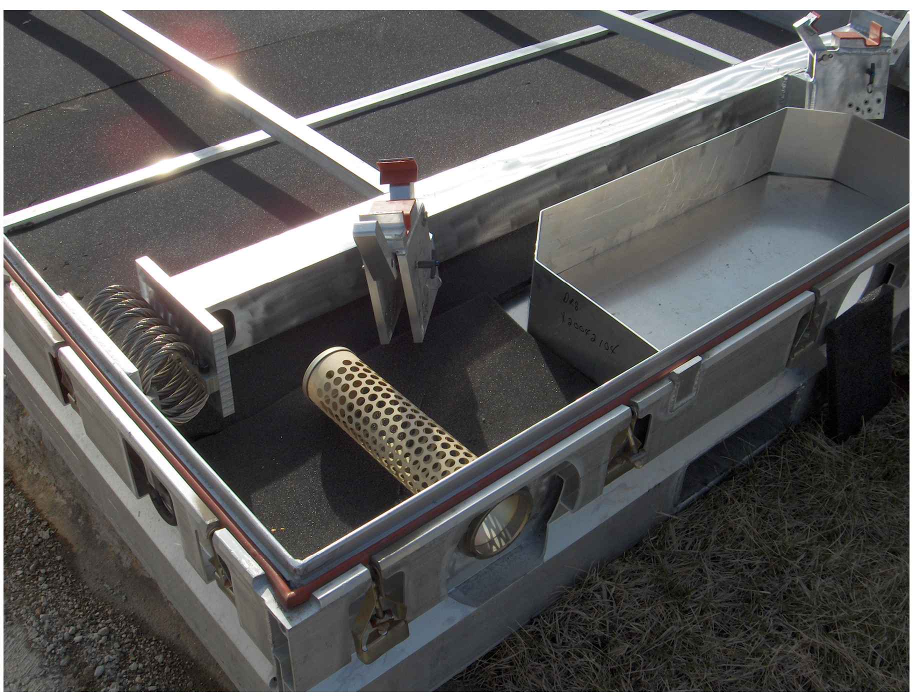


Figure 2. Stainless Steel Helical Isolators, Document Basket, and Desiccant Basket

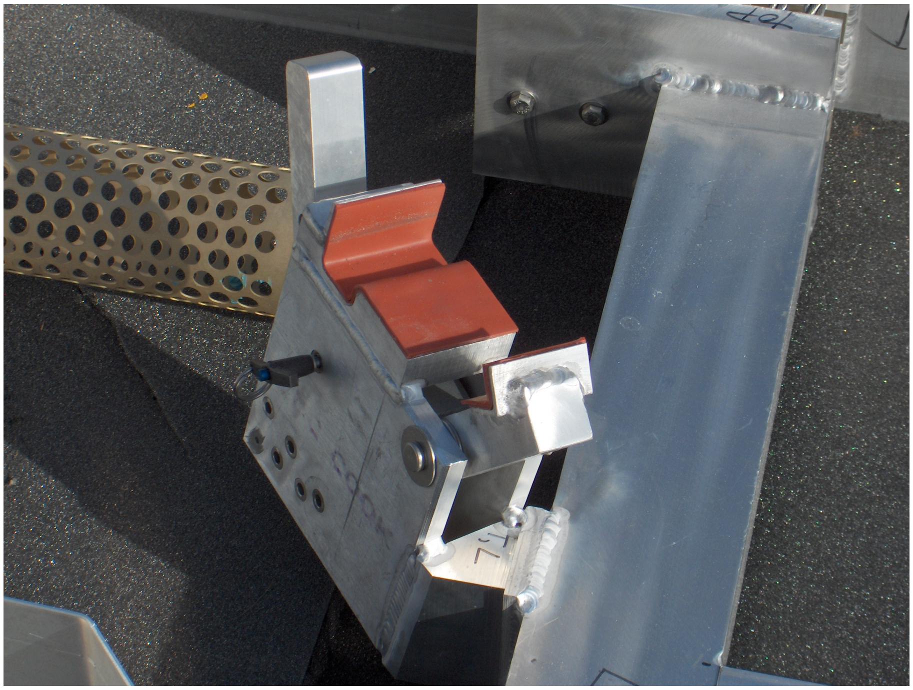


Figure 3. AFT Radome Attachment Clamps

Figure 4. FWD Radome Attachment Clamps

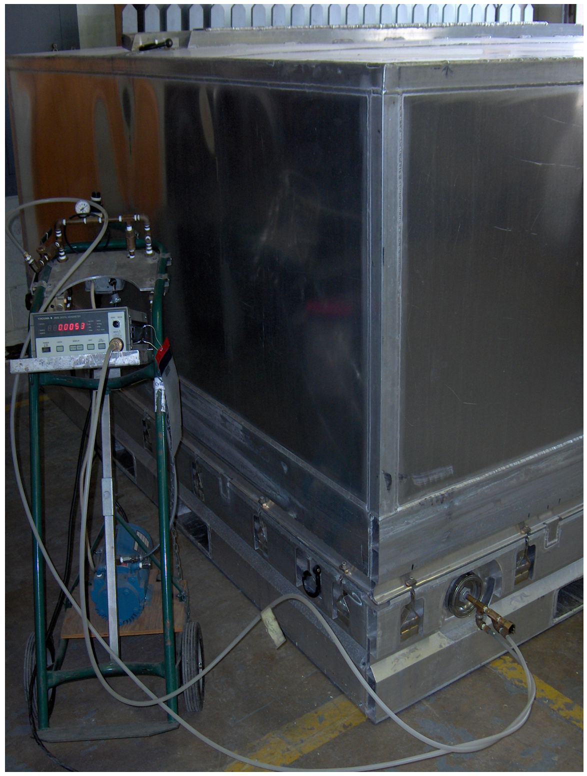


Figure 5. Leak Test

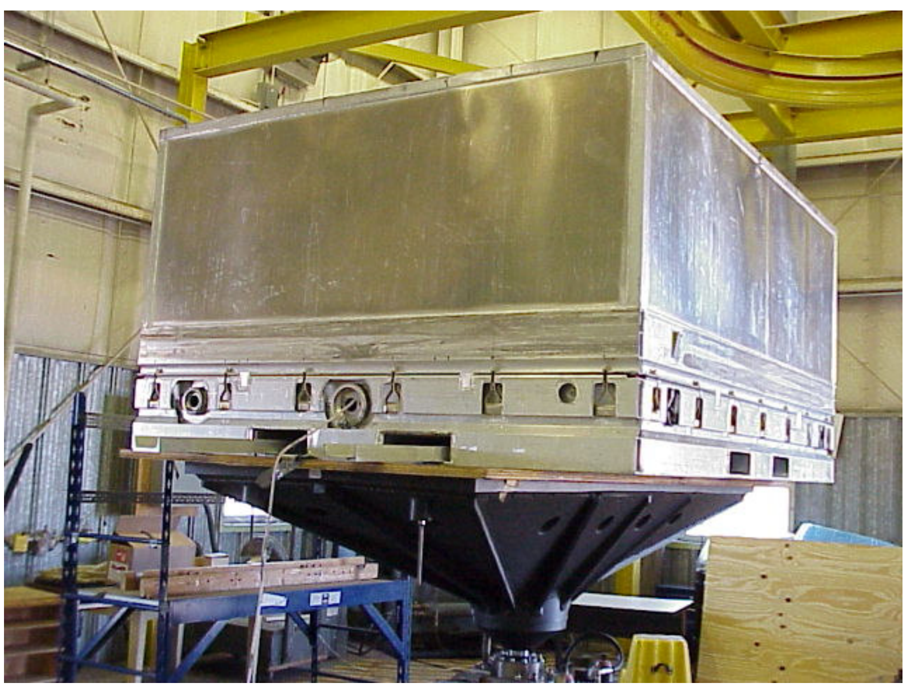


Figure 6. Vibration Test, Resonance Dwell

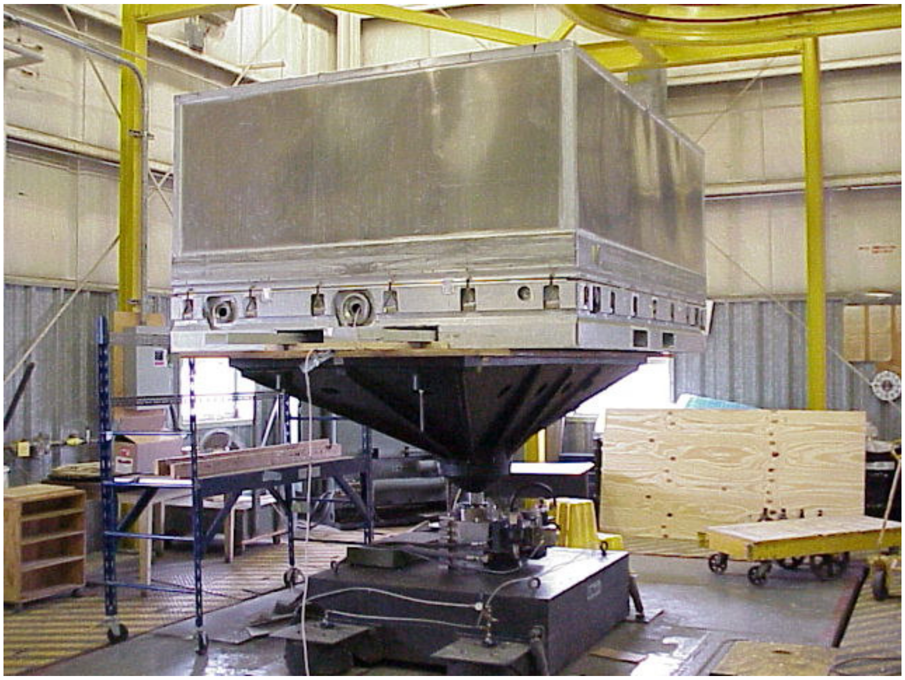


Figure 7. Vibration Test, Repetitive Shock

Figure 8. Rough Handling Test, Rotational Corner-wise Drop

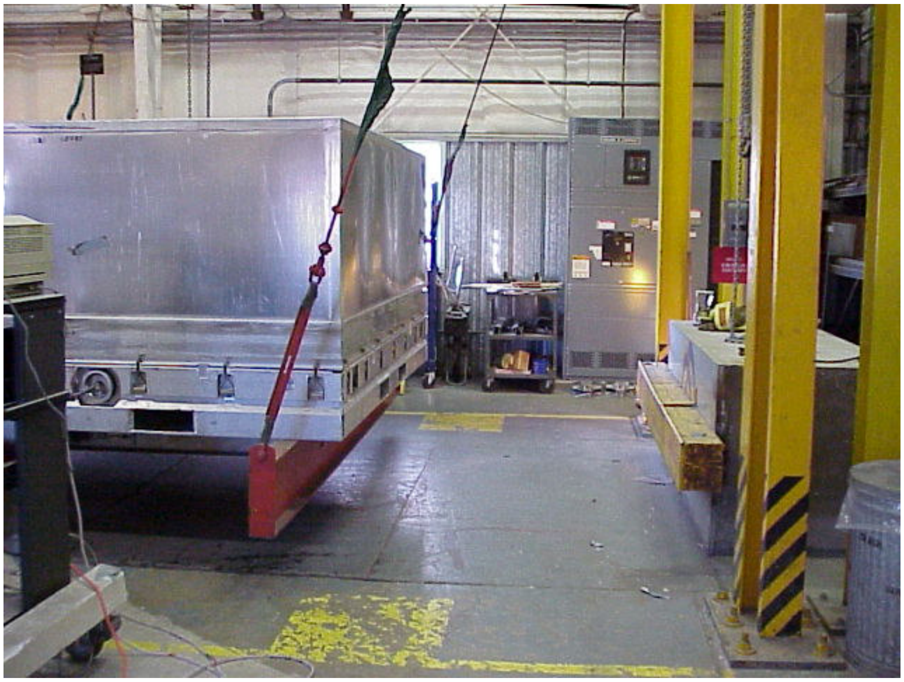


Figure 9. Rough Handling Test, Lateral Impact

APPENDIX 3: Test Data

Table 1. Impact Test Summary

IMPACT TYPE	TEST TEMPERATURE	IMPACT LOCATION	RESULTANT PEAK G
ROTATIONAL - CORNER	ambient	forward-left	25
ROTATIONAL - CORNER	ambient	forward-right	24
ROTATIONAL - CORNER	ambient	aft-left	22
ROTATIONAL - CORNER	ambient	aft-right	23
ROTATIONAL - EDGE	ambient	forward-bottom	34
ROTATIONAL - EDGE	ambient	aft-bottom	39
ROTATIONAL - EDGE	ambient	left-bottom	29
ROTATIONAL - EDGE	ambient	right-bottom	28
LATERAL IMPACT - FACE	ambient	forward	29
LATERAL IMPACT - FACE	ambient	aft	45
LATERAL IMPACT - FACE	ambient	left	31
LATERAL IMPACT - FACE	ambient	right	26

Table 2. Container Resonant Frequency and Transmissibility Values.

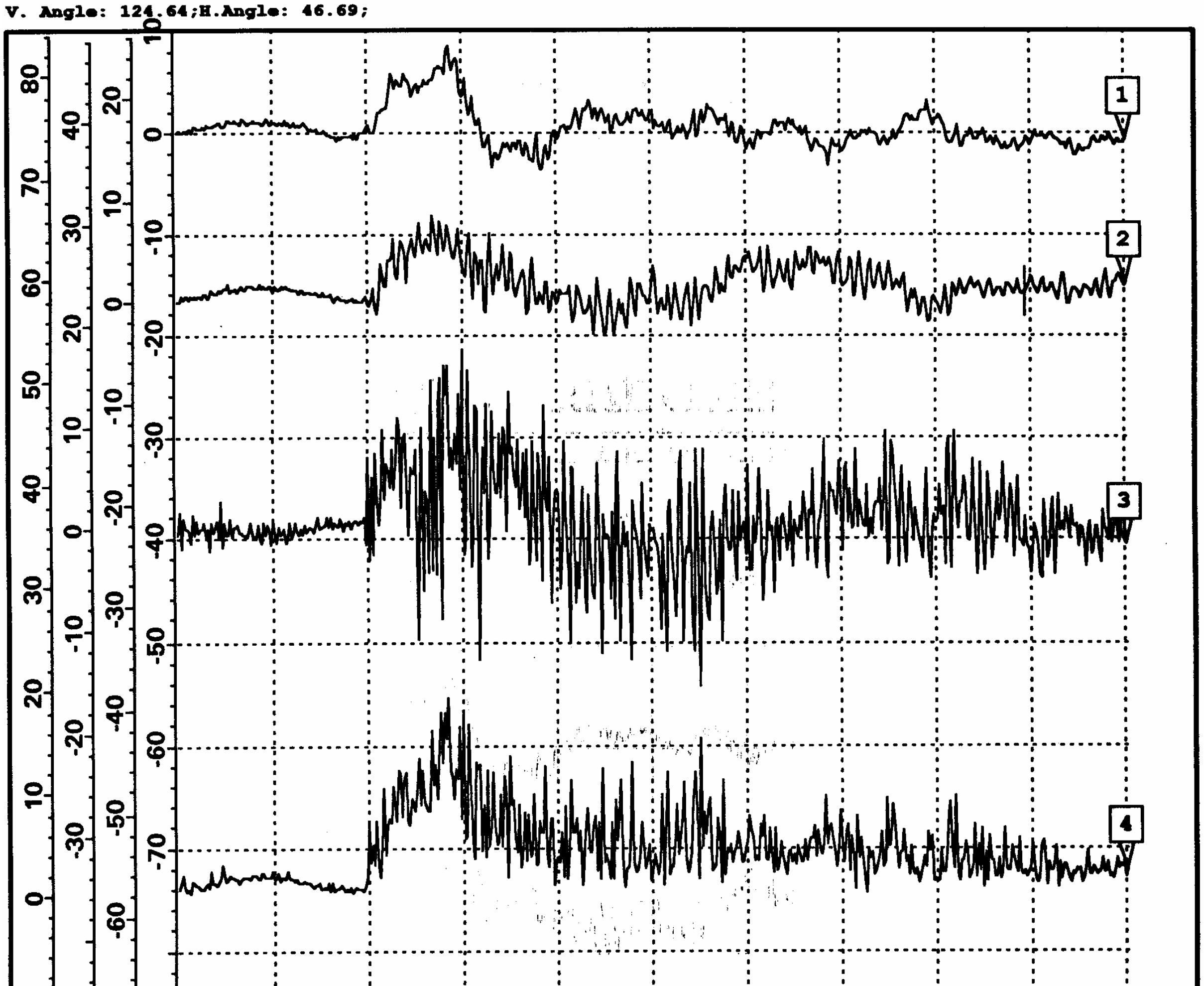
TEST TEMPERATURE	DWELL TIME	RESONANT FREQUENCY	TRANSMISSIBILITY
Ambient	5 min	11.3 Hz	3.7
Ambient	15 min	11 Hz	3.1
Ambient	30 min	11.3 Hz	3.2

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 13:00	Test Engineer :	Evans
Test type :	Corner drop	Impact Point :	Forward left corner
Container/Item:	C17 Radome	Drop Height :	12 inches

V. Angle: 124.64;H.Angle: 46.69;



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	233. mS	-1.06 g's	9.02 g's	61.79 In/s	26 mS	1	2
2	233. mS	1.05 g's	9.14 g's	155.69 In/s	26 mS	1	2
3	233. mS	1.12 g's	21.80 g's	81.89 In/s	26 mS	1	2
R	233. mS	1.87 g's	24.58 g's	186.45 In/s	26 mS	1	2

PEAK G RESULTANT: 25 Gs. PEAK G (Z) = 22 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose. Ambient temperature _humidity.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

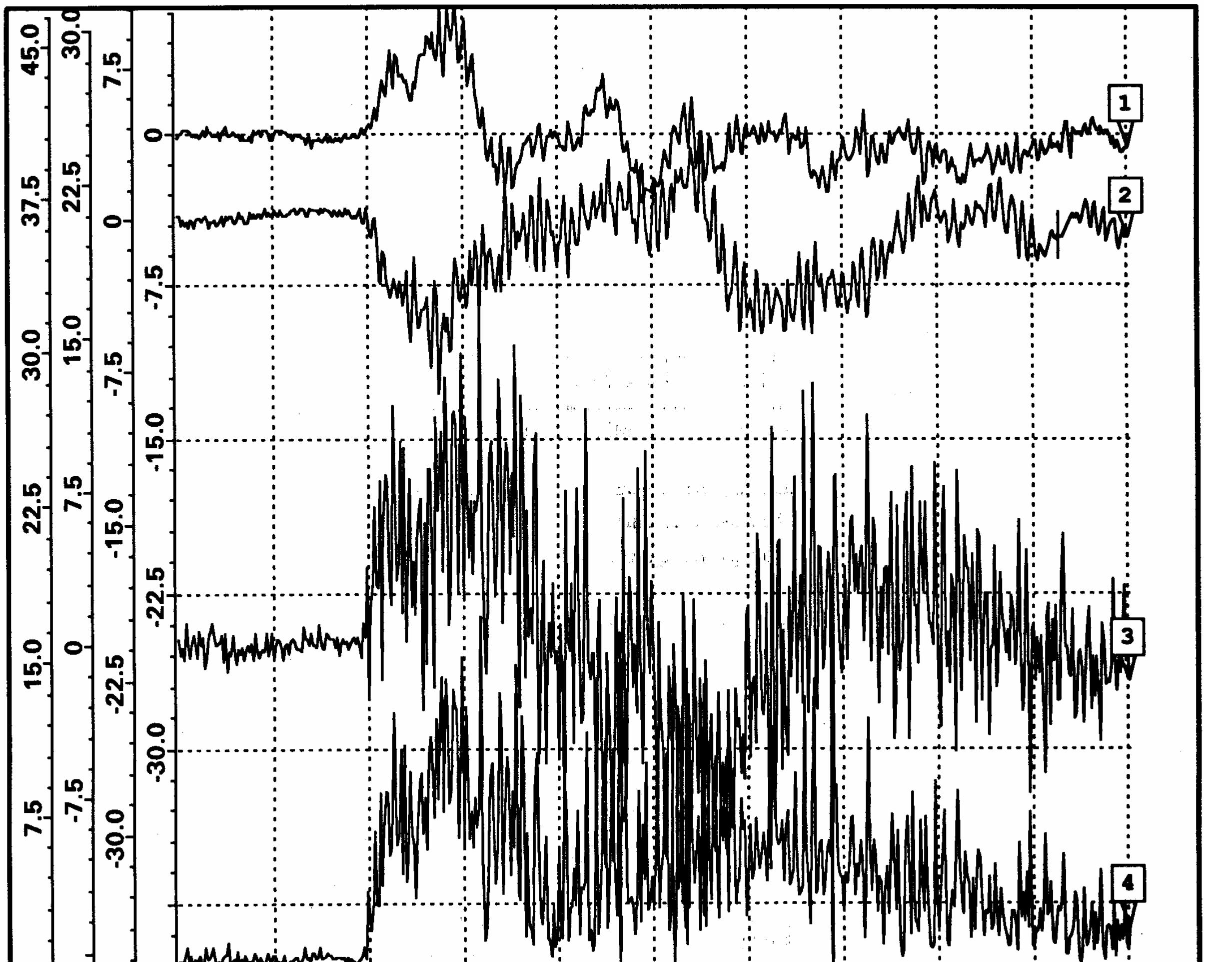
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 12:43	Test Engineer	:	Evans
Test type :	Corner drop	Impact Point	:	forward rt corner
Container/Item:	C17 Radome	Drop Height	:	12 inches

V. Angle: 98.91;H.Angle: 252.71;



Ch.	Time		Curr Amp	Peak Amp	1st Int	Time/Div		Hexp	Vexp
1	242.	mS	-0.43 g's	7.56 g's	-7.46 In/s	26	mS	1	2
2	242.	mS	-0.82 g's	-8.82 g's	-102.10 In/s	26	mS	1	2
3	242.	mS	-2.64 g's	-23.74 g's	67.33 In/s	26	mS	1	2
R	242.	mS	2.80 g's	23.98 g's	122.53 In/s	26	mS	1	2

PEAK G RESULTANT: 24 Gs. PEAK G (Z) = 24 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose. Ambient temperature _humidity.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

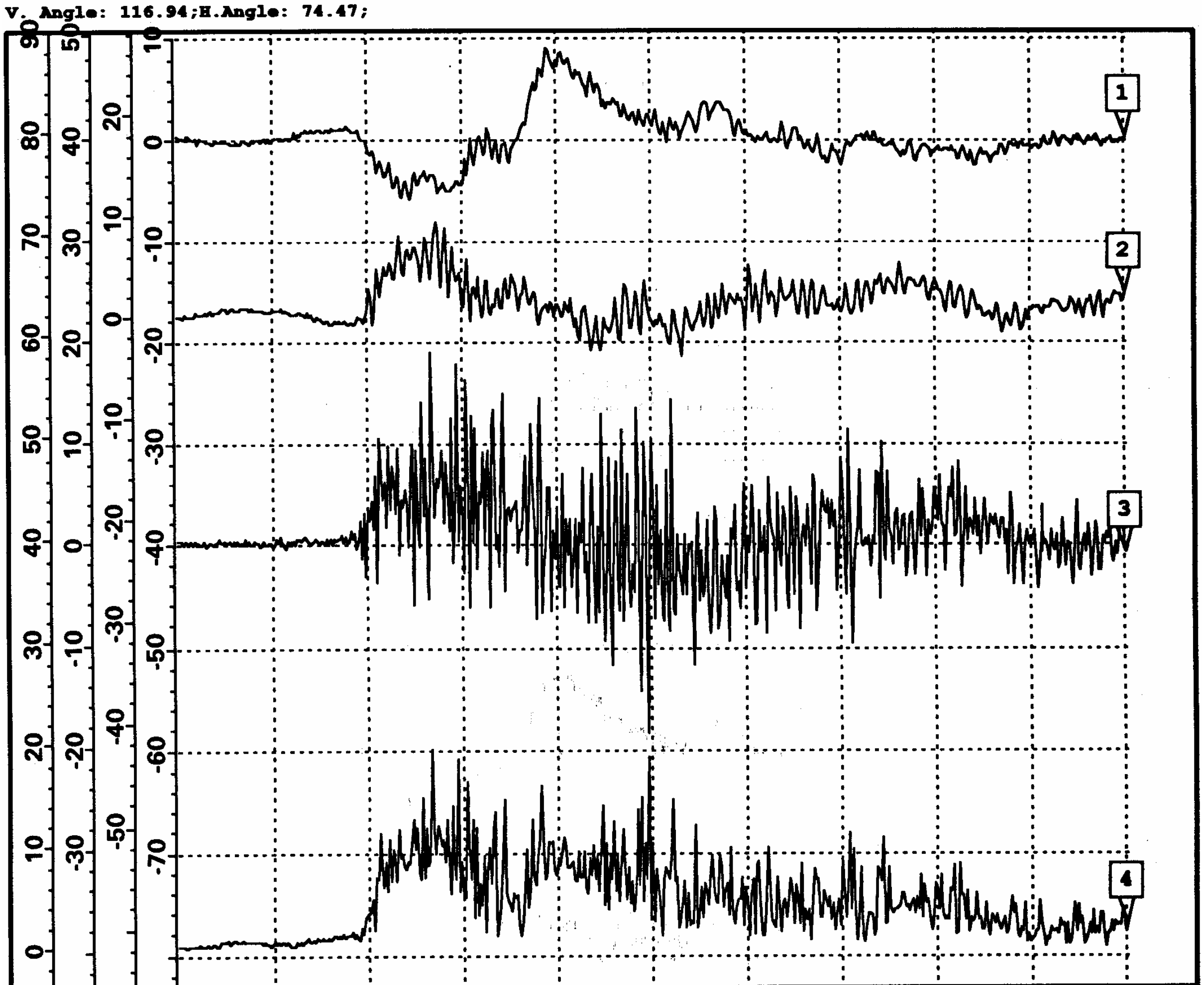
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 12:57	Test Engineer :	Evans
Test type :	Corner drop	Impact Point :	Aft left corner
Container/Item:	C17 Radome	Drop Height :	12 inches

V. Angle: 116.94;H.Angle: 74.47;



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	238. mS	-0.69 g's	9.27 g's	24.01 In/s	26 mS	1	2
2	238. mS	0.36 g's	9.83 g's	118.90 In/s	26 mS	1	2
3	238. mS	1.30 g's	21.57 g's	89.23 In/s	26 mS	1	2
R	238. mS	1.52 g's	22.15 g's	150.59 In/s	26 mS	1	2

PEAK G RESULTANT: 22 Gs. PEAK G (Z) = 22 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose. Ambient temperature _humidity.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

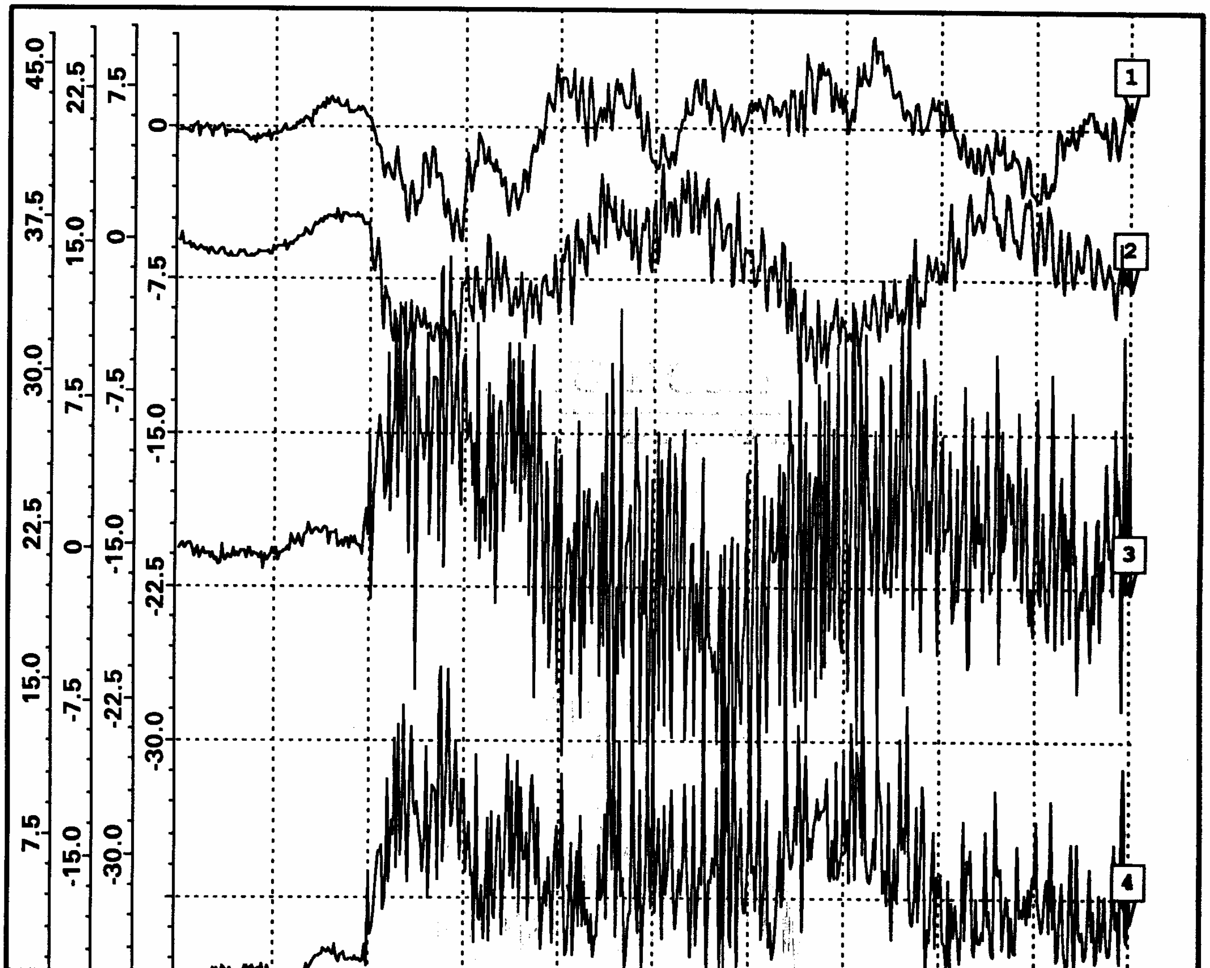
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 12:40	Test Engineer :	Evans
Test type :	Corner drop	Impact Point :	aft right corner
Container/Item:	C17 Radome	Drop Height :	12 inches

V. Angle: 92.18;H.Angle: 159.00;



	Ch.	Time		Curr Amp	Peak Amp	1st Int	Time/Div		Hexp	Vexp
○	1	258.	mS	-0.05 g's	-5.91 g's	-11.81 In/s	26	mS	1	2
◉	2	258.	mS	-1.26 g's	-7.97 g's	-118.82 In/s	26	mS	1	2
○	3	258.	mS	0.48 g's	22.15 g's	75.18 In/s	26	mS	1	2
○	R	258.	mS	1.35 g's	22.77 g's	141.10 In/s	26	mS	1	2

PEAK G RESULTANT: 22 Gs. PEAK G (Z) = 22 Gs. Unfiltered.

ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose. Ambient temperature _humidity.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

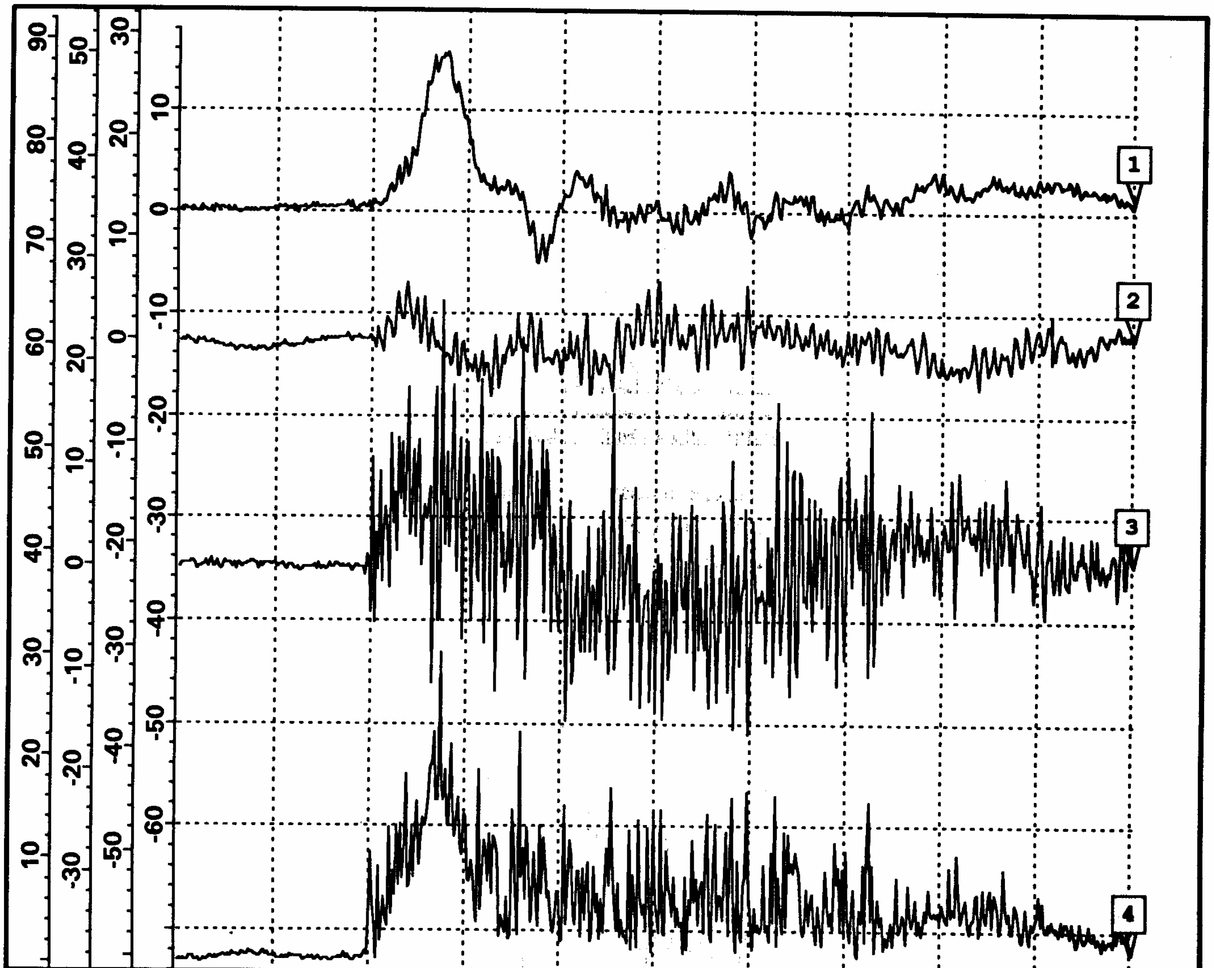
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 12:50	Test Engineer :	Evans
Test type :	Edge drop	Impact Point :	Forward edge
Container/Item:	C17 Radome	Drop Height :	12 inches

V. Angle: 47.21;H.Angle: 83.93;



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	238. mS	2.70 g's	15.83 g's	148.95 In/s	26 mS	1	2
2	238. mS	0.31 g's	-6.45 g's	-31.42 In/s	26 mS	1	2
3	238. mS	2.90 g's	29.97 g's	79.68 In/s	26 mS	1	2
R	238. mS	3.97 g's	33.67 g's	171.82 In/s	26 mS	1	2

PEAK G RESULTANT: 34 Gs. PEAK G (Z) = 30 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose. Ambient temperature _humidity.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

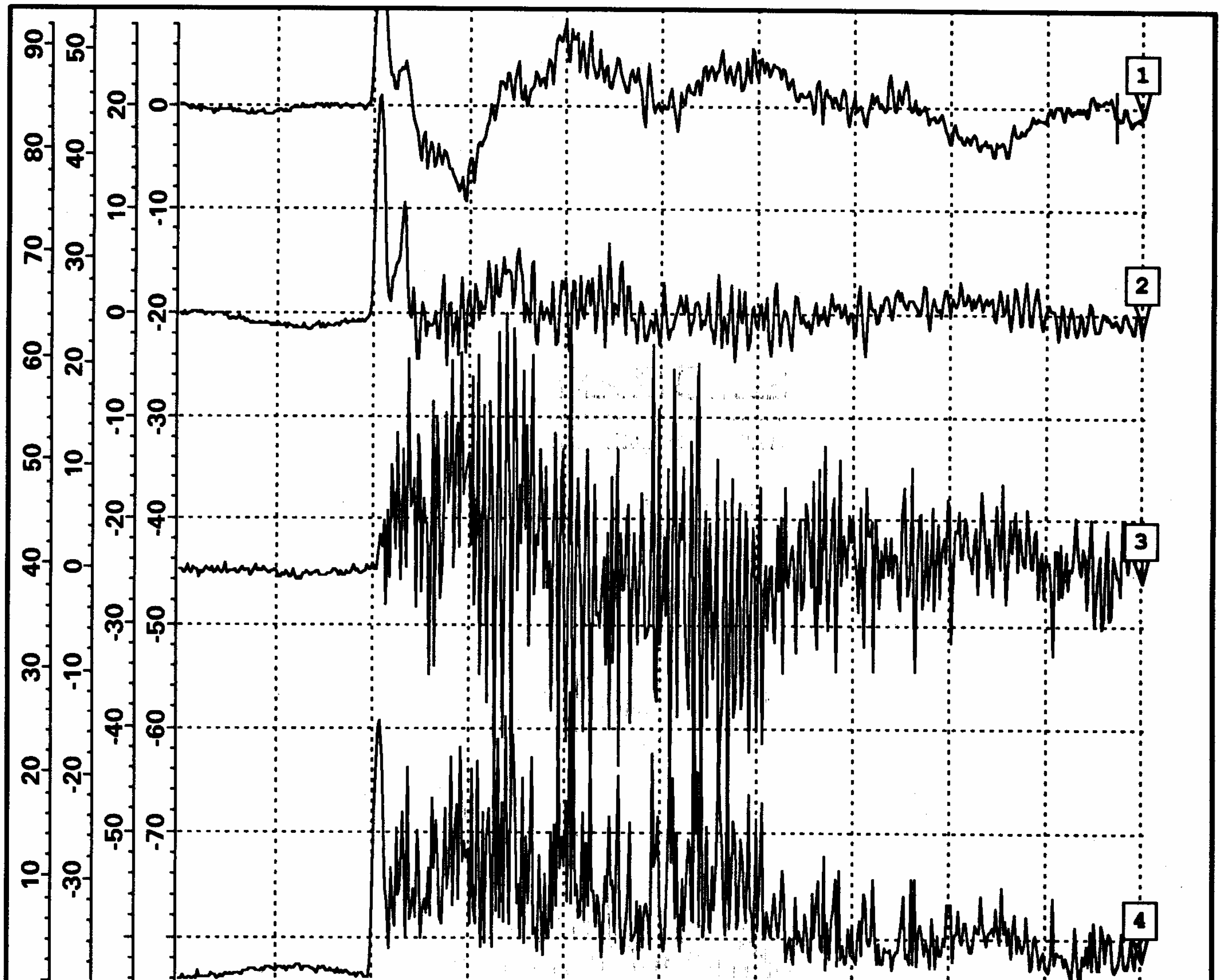
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 12:54	Test Engineer	:	Evans
Test type :	Edge drop	Impact Point	:	Aft edge
Container/Item:	C17 Radome	Drop Height	:	12 inches

V. Angle: 144.50;H.Angle: 118.26;



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	253. mS	-0.81 g's	13.45 g's	37.88 In/s	26 mS	1	2
2	253. mS	-0.27 g's	21.72 g's	47.70 In/s	26 mS	1	2
3	253. mS	0.51 g's	37.96 g's	74.44 In/s	26 mS	1	2
R	253. mS	0.99 g's	38.78 g's	96.18 In/s	26 mS	1	2

PEAK G RESULTANT: 39 Gs. PEAK G (Z) = 38 Gs. Unfiltered.
Foam in lid.

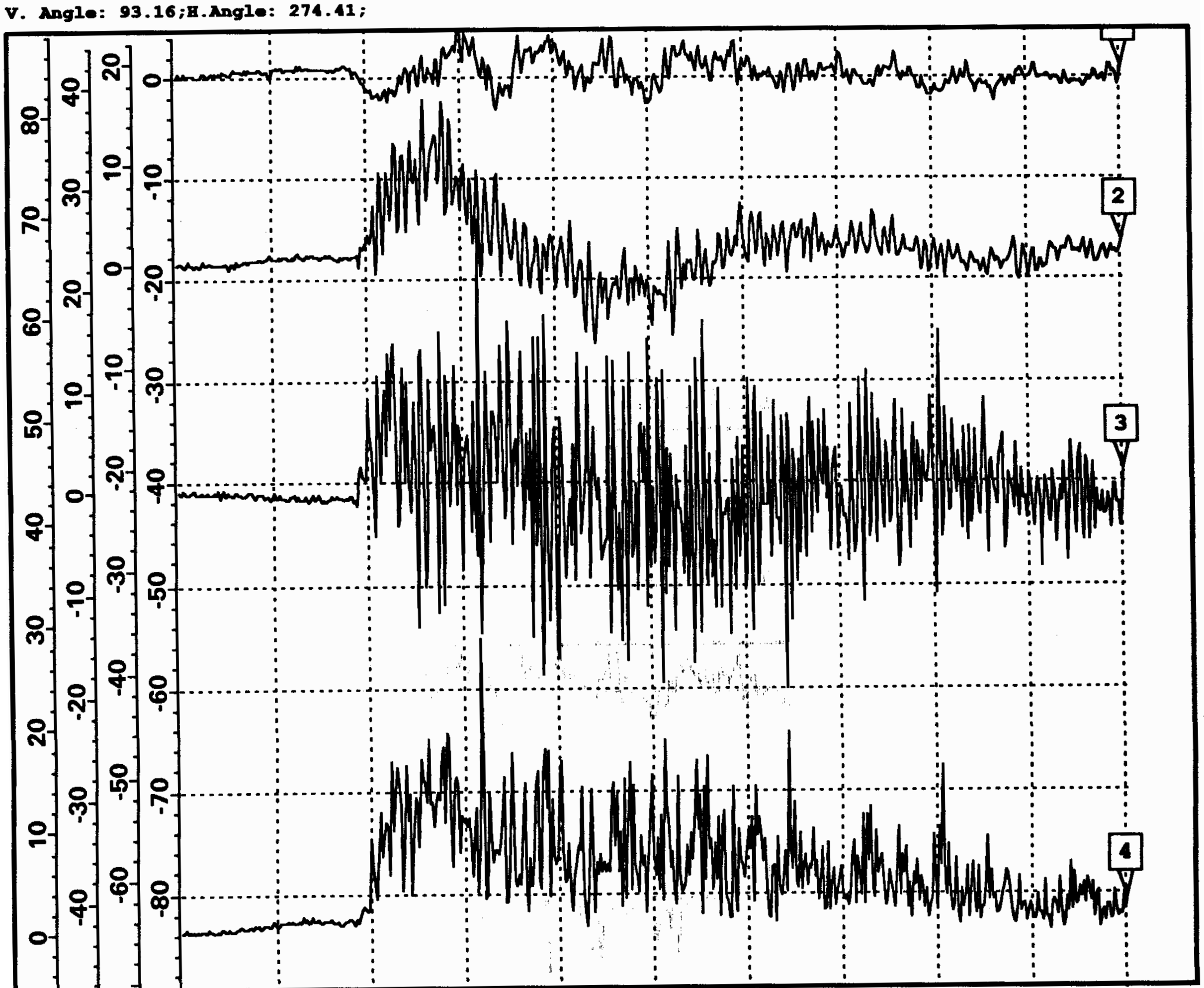
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.); Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose. Ambient temperature _humidity.
ASTM D 4169, ASTM D 6179, SAE ARP1967.

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 13:03	Test Engineer :	Evans
Test type :	Edge drop	Impact Point :	Left edge
Container/Item:	C17 Radome	Drop Height :	12 inches

V. Angle: 93.16;H.Angle: 274.41;



Ch.	Time		Curr Amp	Peak Amp	1st Int	Time/Div		Hexp	Vexp
1	238.	mS	-0.27 g's	6.15 g's	37.55 In/s	26	mS	1	2
2	238.	mS	0.38 g's	16.61 g's	152.58 In/s	26	mS	1	2
3	238.	mS	-4.91 g's	27.53 g's	52.75 In/s	26	mS	1	2
R	238.	mS	4.93 g's	29.14 g's	165.75 In/s	26	mS	1	2

PEAK G RESULTANT: 29 Gs. PEAK G (Z) = 28 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

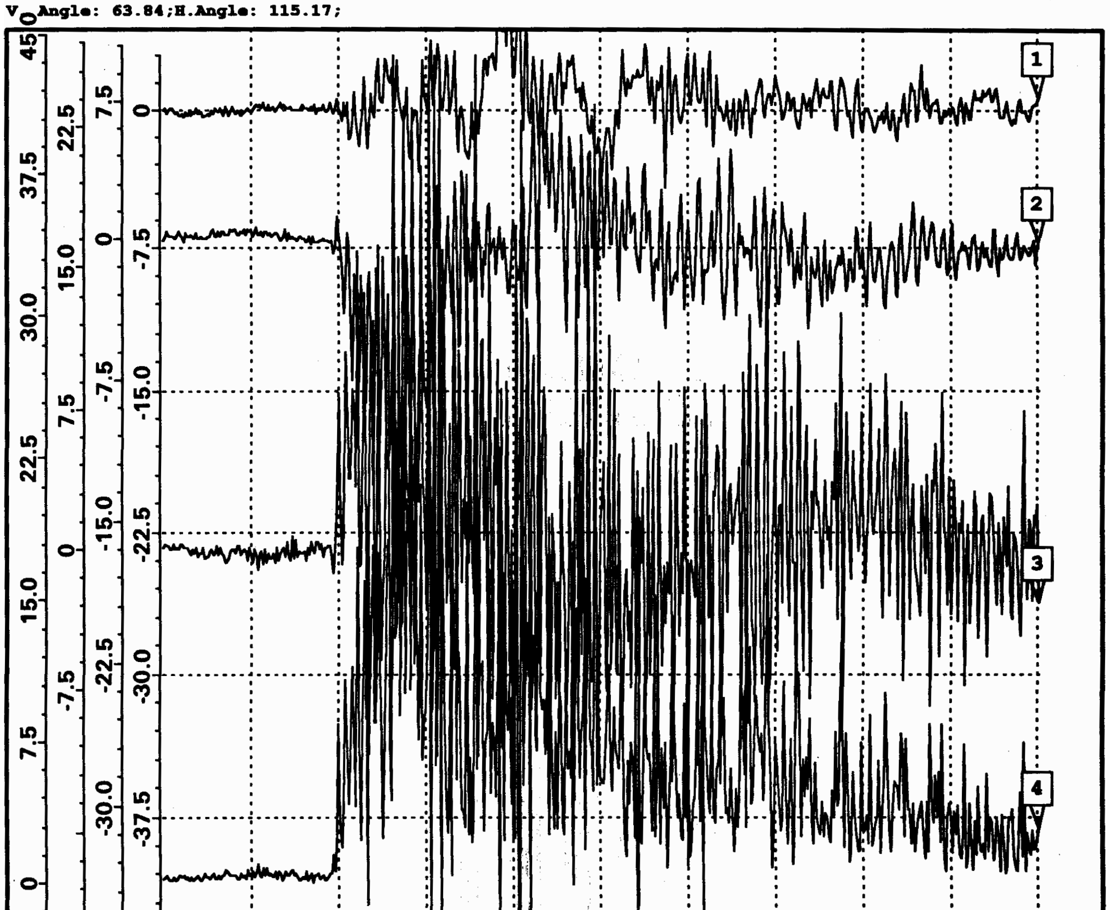
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

ROTATIONAL IMPACT TEST

	Oct 27 2004 12:46	Test Engineer :	Evans
Test type :	Edge drop	Impact Point :	right edge
Container/Item:	C17 Radome	Drop Height :	12 inches

V0Angle: 63.84;H.Angle: 115.17;



Ch.	Time		Curr Amp	Peak Amp	1st Int	Time/Div		Hexp	Vexp
1	242.	mS	0.65 g's	7.02 g's	44.37 In/s	26	mS	1	2
2	242.	mS	-0.56 g's	-15.77 g's	-95.01 In/s	26	mS	1	2
3	242.	mS	1.19 g's	26.35 g's	73.65 In/s	26	mS	1	2
R	242.	mS	1.47 g's	28.03 g's	128.14 In/s	26	mS	1	2

PEAK G RESULTANT: 28 Gs. PEAK G (Z) = 26 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

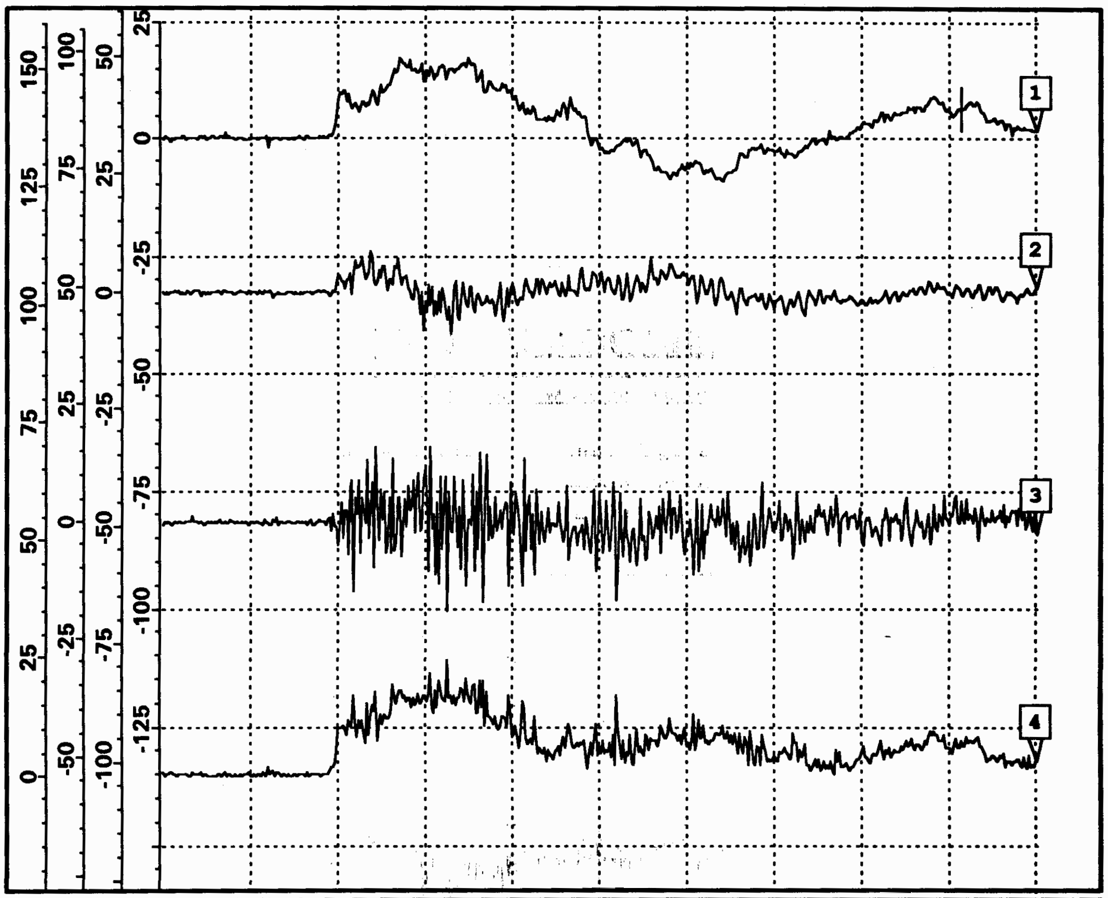
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

PENDULUM IMPACT TEST

	Oct 27 2004 13:35	Test Engineer :	Evans
Test type :	Side impact	Impact Point :	Forward Side
Container/Item:	C17 Radome	Impact Vel. :	12 inches

V. Angle: 35.45;H.Angle: 95.93;



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	238. mS	6.31 g's	19.05 g's	251.92 In/s	26 mS	1	2
2	238. mS	-0.46 g's	10.82 g's	23.06 In/s	26 mS	1	2
3	238. mS	4.47 g's	23.95 g's	-34.69 In/s	26 mS	1	2
R	238. mS	7.75 g's	29.33 g's	255.34 In/s	26 mS	1	2

PEAK G RESULTANT: 30 Gs. PEAK G (X) = 20 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

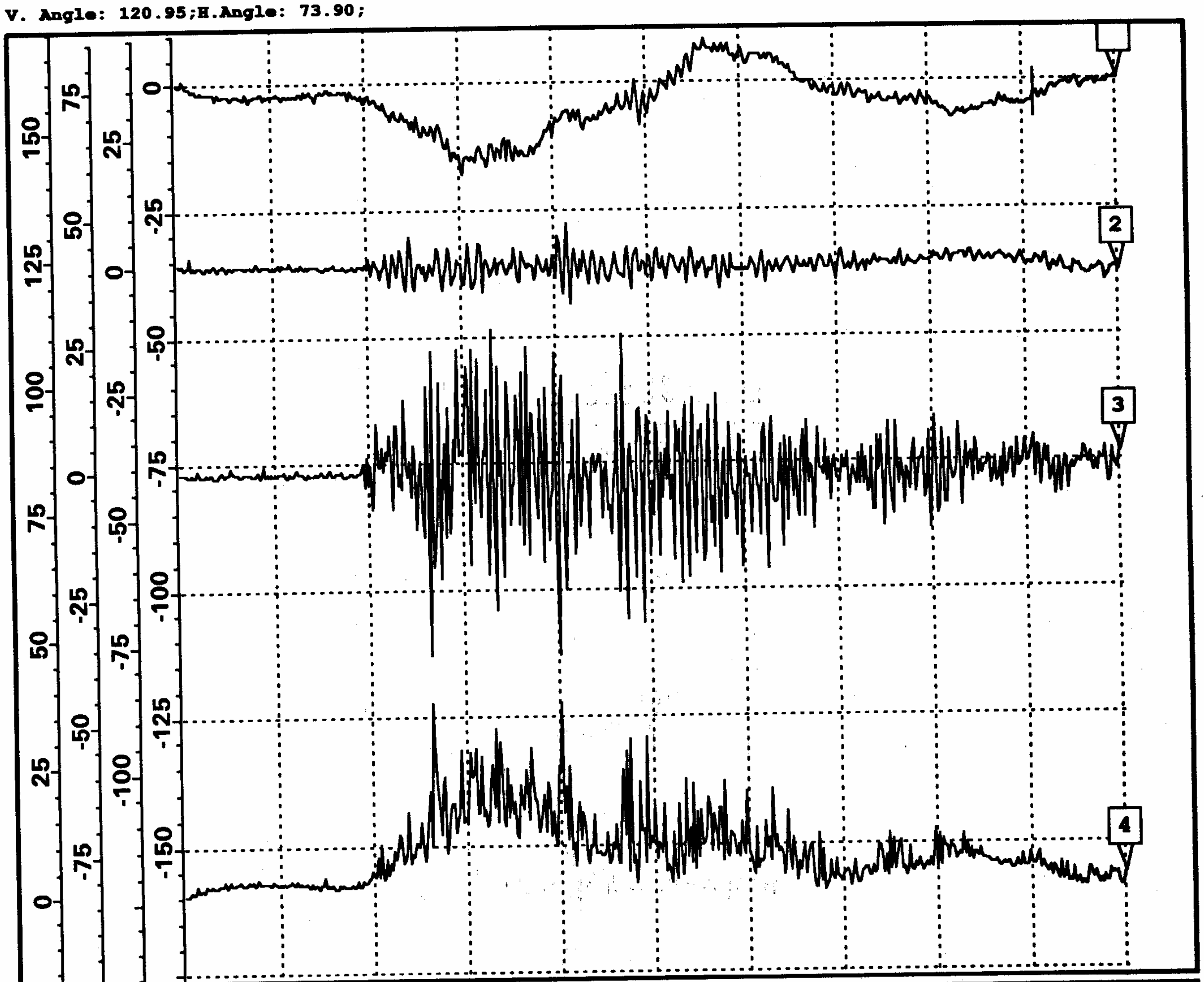
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

PENDULUM IMPACT TEST

	Oct 27 2004 13:42	Test Engineer :	Evans
Test type :	Side impact	Impact Point :	Aft Side
Container/Item:	C17 Radome	Impact Vel. :	12 inches

V. Angle: 120.95;H.Angle: 73.90;



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	238. mS	-2.84 g's	-18.80 g's	-349.98 In/s	26 mS	1	2
2	238. mS	1.31 g's	9.08 g's	7.36 In/s	26 mS	1	2
3	238. mS	4.55 g's	-43.99 g's	-39.63 In/s	26 mS	1	2
R	238. mS	5.52 g's	44.78 g's	352.30 In/s	26 mS	1	2

PEAK G RESULTANT: 45 Gs. PEAK G (X) = 19 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

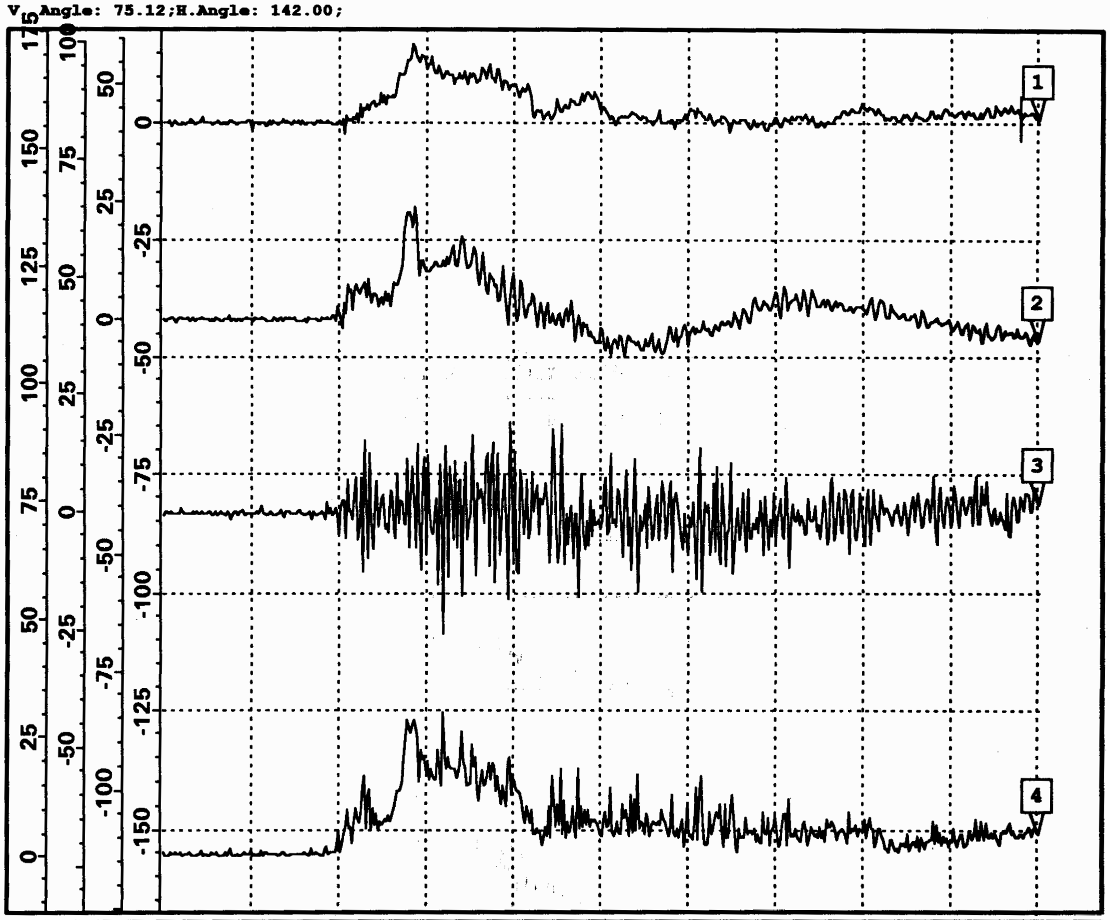
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

PENDULUM IMPACT TEST

	Oct 27 2004 13:47	Test Engineer :	Evans
Test type :	Side impact	Impact Point :	Left Side
Container/Item:	C17 Radome	Impact Vel. :	12 inches

V.Angle: 75.12;H.Angle: 142.00;



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	256. mS	1.30 g's	16.88 g's	275.90 In/s	26 mS	1	2
2	256. mS	-3.86 g's	25.92 g's	175.50 In/s	26 mS	1	2
3	256. mS	3.02 g's	-27.21 g's	-40.25 In/s	26 mS	1	2
R	256. mS	5.08 g's	31.40 g's	329.46 In/s	26 mS	1	2

PEAK G RESULTANT: 32 Gs. PEAK G (Y) = 26 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

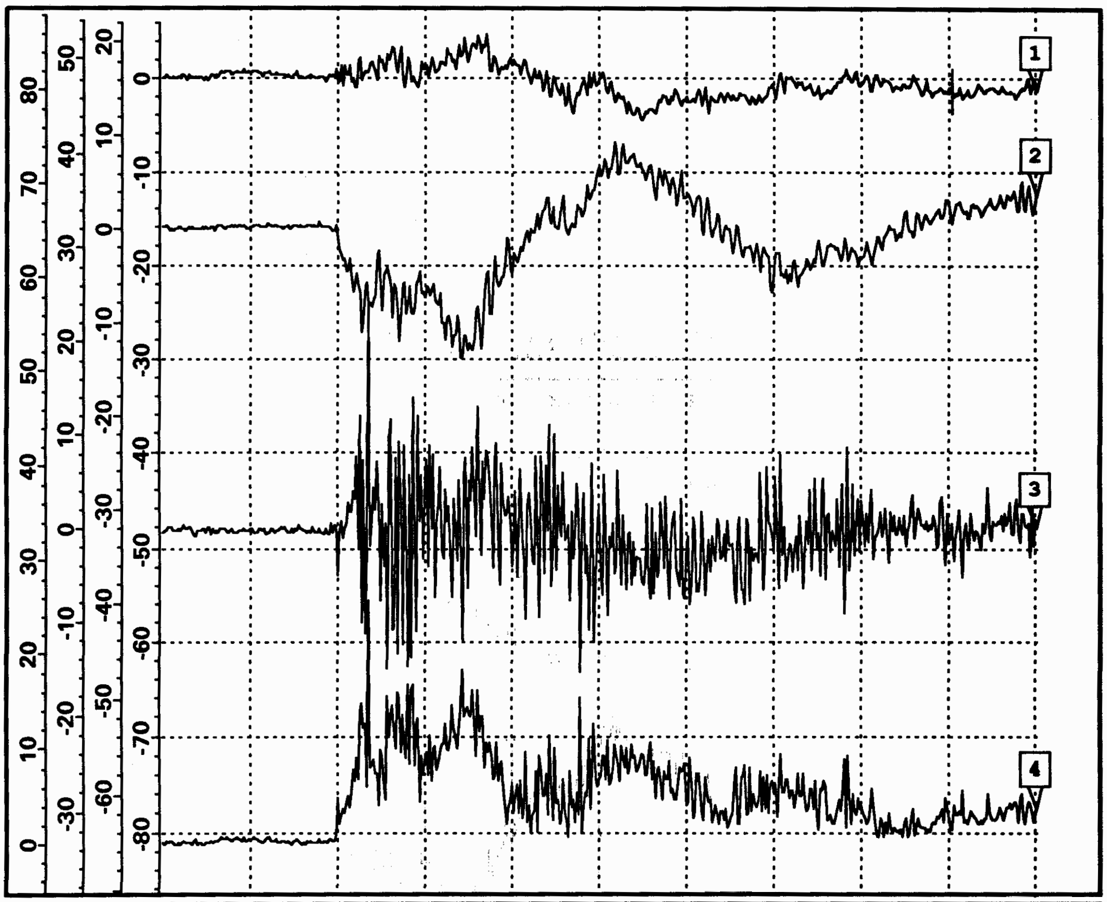
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

PENDULUM IMPACT TEST

	Oct 27 2004 13:18	Test Engineer :	Evans
Test type :	Side impact	Impact Point :	Right Side
Container/Item:	C17 Radome	Impact Vel. :	12 inches

V. Angle: 147.38;H.Angle: 52.85;



Ch.	Time		Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	236.	mS	-1.36 g's	-4.97 g's	-31.49 In/s	26 mS	1	2
2	236.	mS	0.52 g's	-14.51 g's	-118.01 In/s	26 mS	1	2
3	236.	mS	0.69 g's	24.86 g's	-27.67 In/s	26 mS	1	2
R	236.	mS	1.61 g's	26.27 g's	125.24 In/s	26 mS	1	2

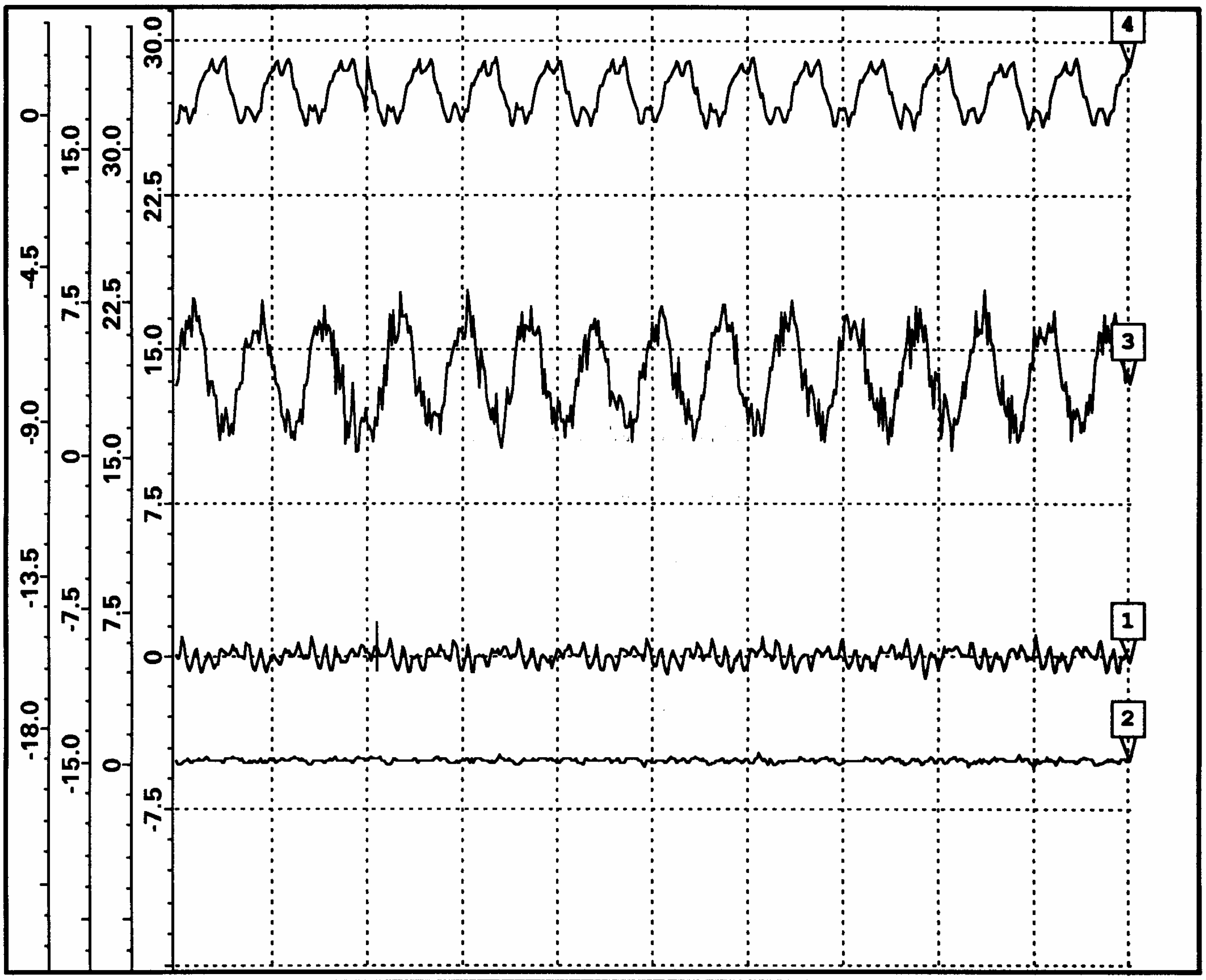
PEAK G RESULTANT: 26 Gs. PEAK G (Z) = 25 Gs. Unfiltered.
Foam in lid.
ACCELEROMETER OUTPUT: Ch1 = X(long.); Ch2 = Y(trans.); Ch3 = Z(vert.);
Ch4 = Resultant. Aft side = desiccant port end.
Accelerometer on radome nose.
ASTM D 4169, ASTM D 6179. SAE ARP1967.

GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

RESONANCE DWELL

DATE / TIME :	Oct 1 2004 10:19	TEST ENGINEER :	Evans
RESONANCE DWELL		FREQUENCY :	11.3 Hz
CONTAINER/ITEM:	C17 Radome	DWELL TIME :	5 min



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	273. mS	0.48 g's	1.20 g's	0.34 In/s	131 mS	1	2
2	273. mS	0.22 g's	0.55 g's	19.19 In/s	131 mS	1	2
3	547. mS	3.70 g's	8.75 g's	822.09 In/s	131 mS	1	2
4	634. mS	-0.19 g's	1.84 g's	167.28 In/s	131 mS	1	2

Resonance frequency = 11.3 Hz. Transmissibility = 3.7

Accelerometer output: Ch1 - X(long.); Ch2 - Y(trans.); Ch3 - Z(vert.); Ch4 - table input. Aft side = desiccant port end.
Ambient temperature and humdity.
ASTM D 4169, ASTM D 999, SAE ARP1967.

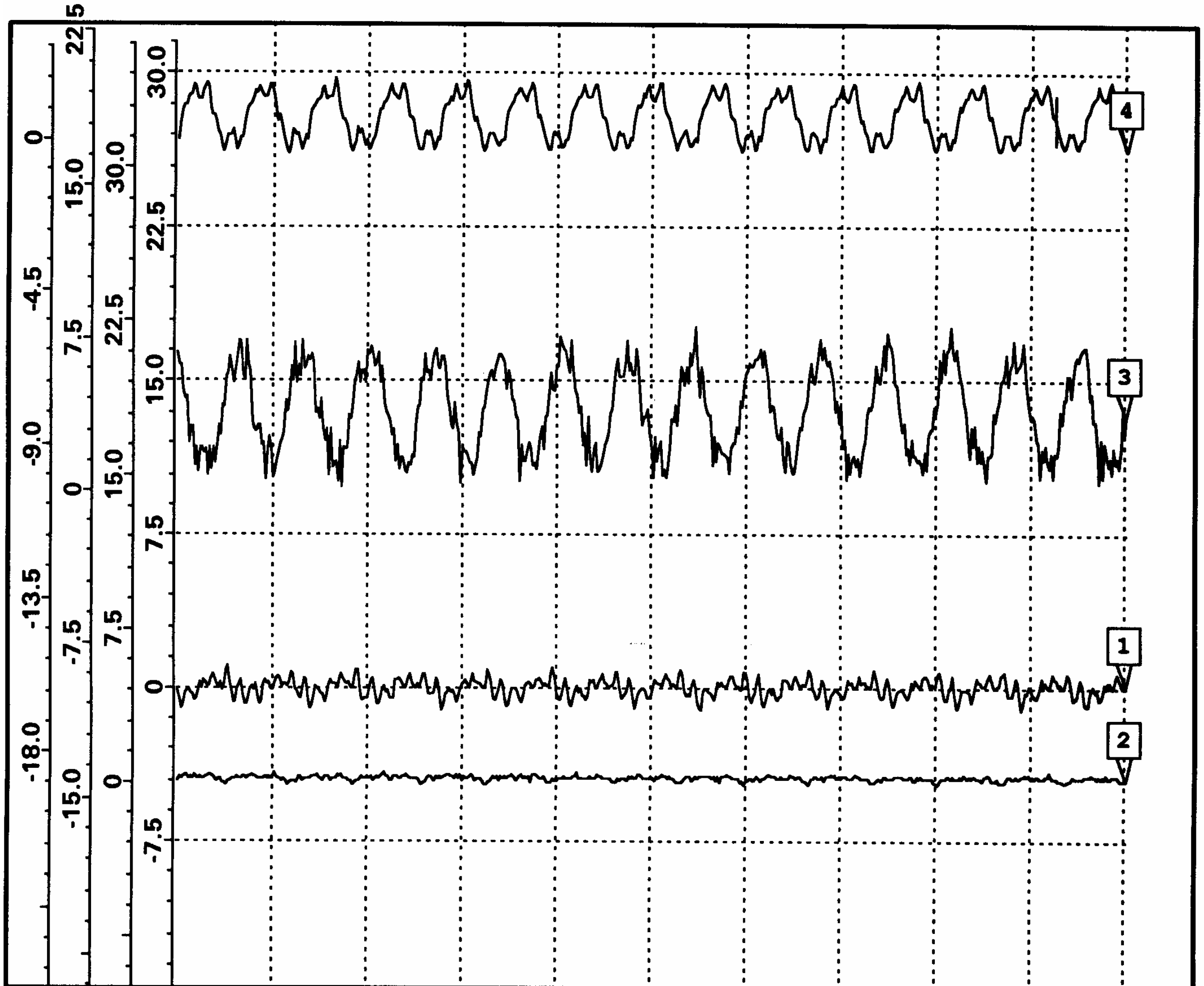
GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

RESONANCE DWELL

DATE / TIME : Oct 1 2004 10:19
RESONANCE DWELL
CONTAINER/ITEM: C17 Radome

TEST ENGINEER : Evans
FREQUENCY : 11.0 Hz
DWELL TIME : 15 min



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	555. mS	-0.08 g's	-1.18 g's	-7.26 In/s	131 mS	1	2
2	1.25 S	0.24 g's	0.68 g's	87.94 In/s	131 mS	1	2
3	555. mS	4.05 g's	7.84 g's	855.09 In/s	131 mS	1	2
4	1.21 S	0.55 g's	1.80 g's	302.62 In/s	131 mS	1	2

Resonance frequency = 11.0 Hz. Transmissibility = 3.1.

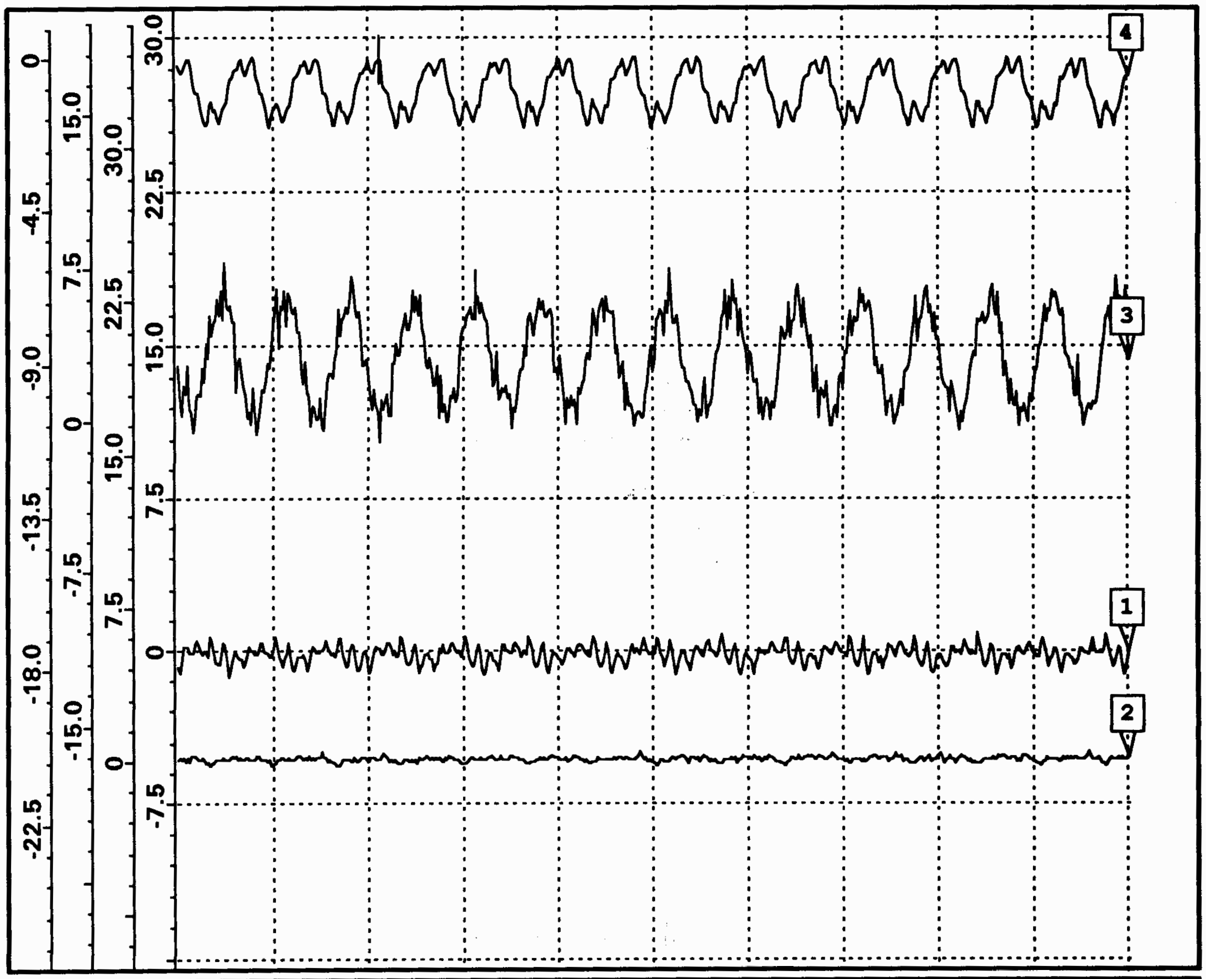
Accelerometer output: Ch1 - X(long.); Ch2 - Y(trans.); Ch3 - Z(vert.);
Ch4 - table input. Aft side = desiccant port end.
Ambient temperature and humdity.
ASTM D 4169, ASTM D 999, SAE ARP1967.

GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

RESONANCE DWELL

DATE / TIME :	Oct 1 2004 10:39	TEST ENGINEER :	Evans
RESONANCE DWELL		FREQUENCY :	11.3 Hz
CONTAINER/ITEM:	C17 Radome	DWELL TIME :	30 min



Ch.	Time		Curr Amp	Peak Amp	1st Int	Time/Div		Hexp	Vexp
1	744.	mS	0.41 g's	-1.34 g's	-53.59 In/s	131	mS	1	2
2	744.	mS	-0.15 g's	0.55 g's	30.42 In/s	131	mS	1	2
3	409.	mS	6.13 g's	8.06 g's	486.85 In/s	131	mS	1	2
4	110.	mS	-1.94 g's	-2.14 g's	-136.12 In/s	131	mS	1	2

Resonance frequency = 11.3 Hz. Transmissibility = 3.2.

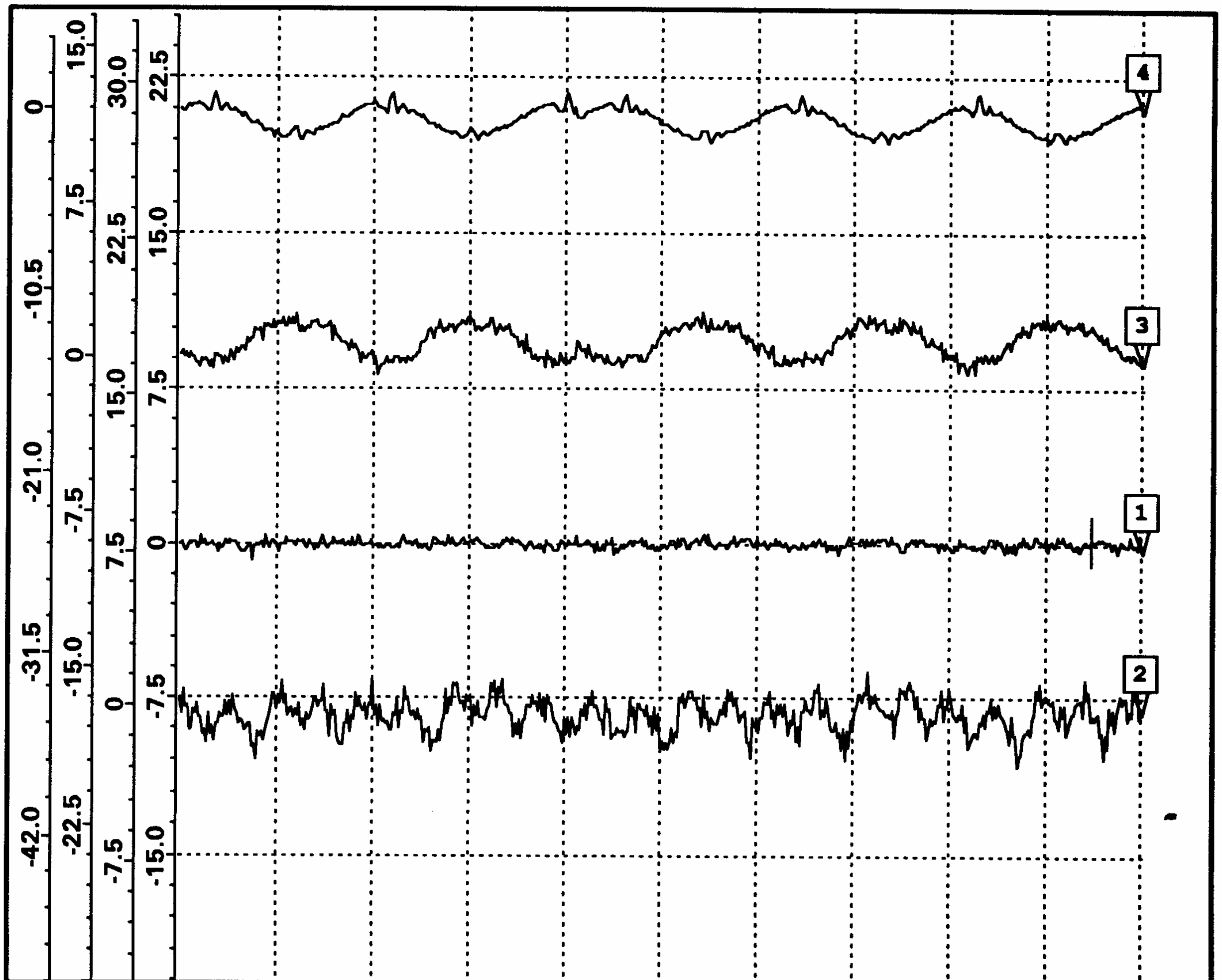
Accelerometer output: Ch1 - X(long.); Ch2 - Y(trans.); Ch3 - Z(vert.); Ch4 - table input. Aft side = desiccant port end.
Ambient temperature and humdity.
ASTM D 4169, ASTM D 999, SAE ARP1967.

GHI SYSTEMS, INC. CAT SYSTEM

C17 RADOME

REPETITVE SHOCK TEST

DATE / TIME :	Oct 26 2004 13:13	TEST ENGINEER :	Evans
Test Type :	Repetitive Shock	FREQUENCY :	4.17 Hz
CONTAINER/ITEM:	C17 Radome	DWELL TIME :	5 min



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	1.24 S	0.23 g's	-0.74 g's	21.99 In/s	131 mS	1	2
2	1.23 S	0.47 g's	-3.16 g's	-198.32 In/s	131 mS	1	2
3	1.26 S	0.58 g's	2.39 g's	353.73 In/s	131 mS	1	2
4	962. mS	-1.59 g's	-2.12 g's	-220.54 In/s	131 mS	1	2

Accelerometer output: Ch1 - X(long.); Ch2 - Y(trans.); Ch3 - Z(vert.); Ch4 - table input.

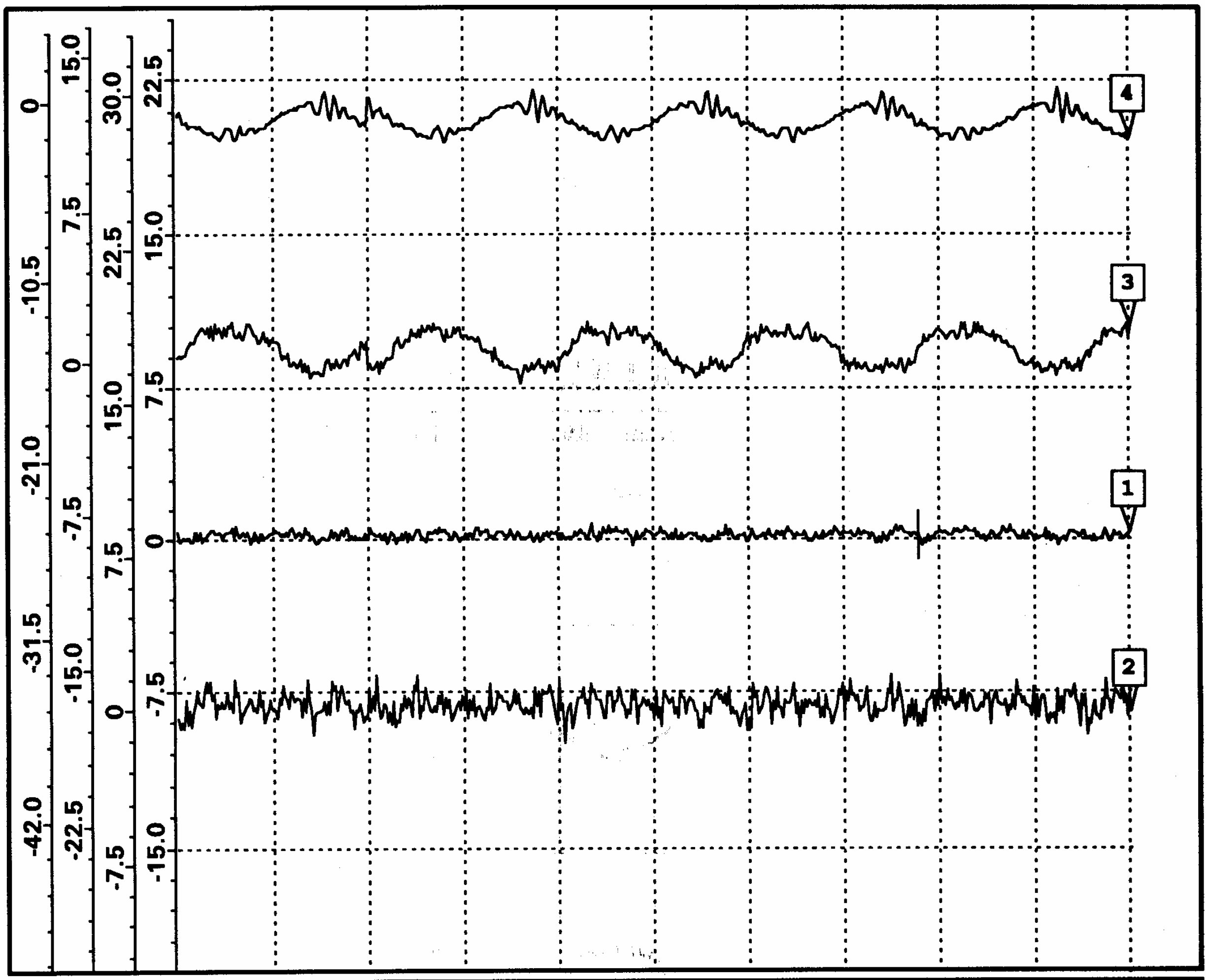
Aft side = desiccant port end.

Ambient temperature and humdity.
ASTM D 4169, ASTM D 999, SAE ARP1967.

C17 RADOME

REPETITIVE SHOCK TEST

DATE / TIME :	Oct 26 2004 13:14	TEST ENGINEER :	Evans
TEST TYPE :	Repetitive Shock	FREQUENCY :	4.17 Hz
CONTAINER/ITEM:	C17 Radome	DWELL TIME :	60 minutes



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	1.02 s	0.18 g's	0.92 g's	75.56 In/s	131 mS	1	2
2	1.02 s	-0.19 g's	2.18 g's	95.70 In/s	131 mS	1	2
3	1.02 s	0.84 g's	2.55 g's	276.46 In/s	131 mS	1	2
4	1.02 s	-1.24 g's	-2.37 g's	-353.06 In/s	131 mS	1	2

Accelerometer output: Ch1 - X(long.); Ch2 - Y(trans.); Ch3 - Z(vert.);
Ch4 - table input.

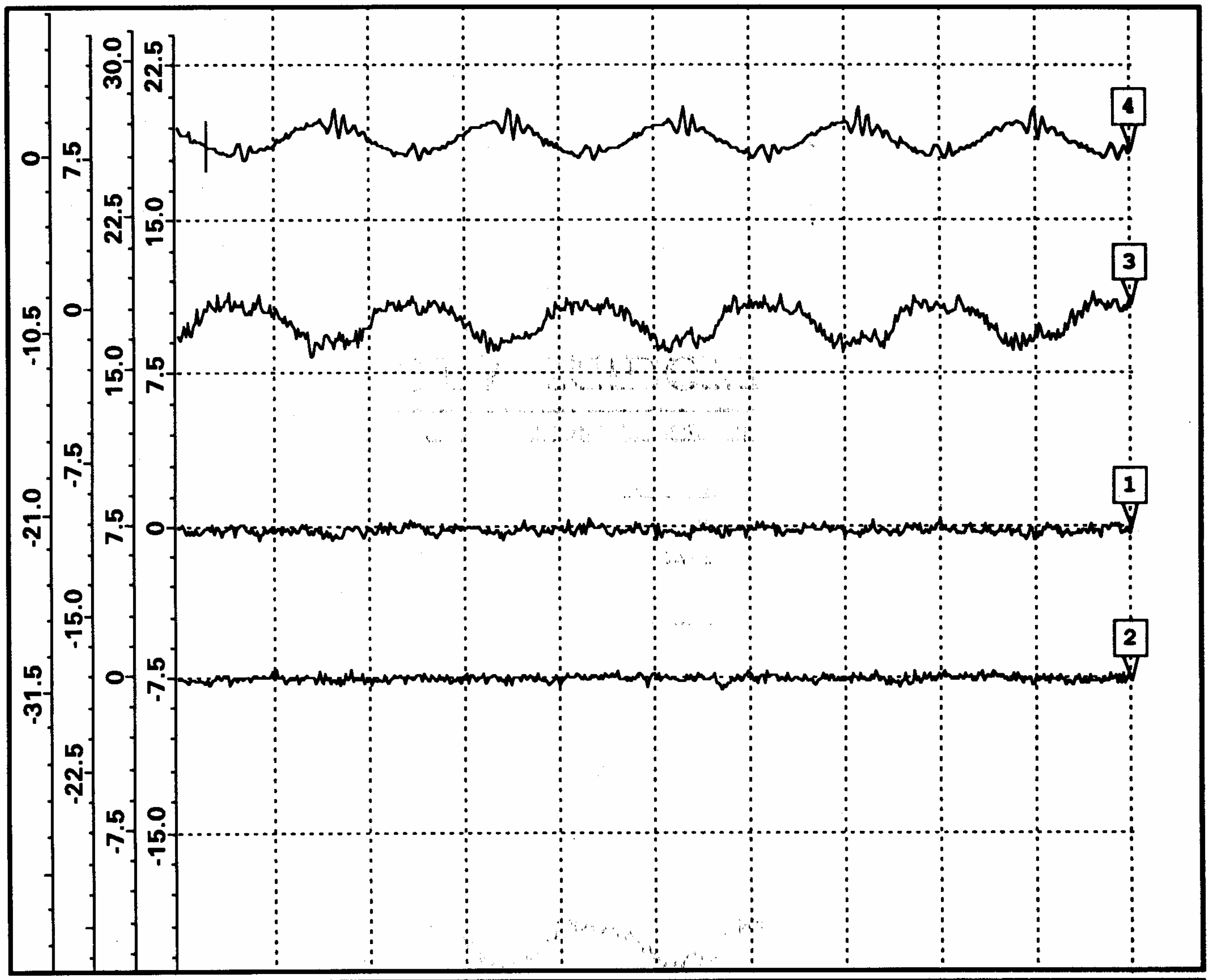
Aft side = desiccant port end.

Ambient temperature and humdity.
ASTM D 4169, ASTM D 999, SAE ARP1967.

C17 RADOME

REPETITIVE SHOCK TEST

DATE / TIME : Oct 26 2004 14:48 **TEST ENGINEER : Evans**
TEST TYPE : Repetitive Shock **FREQUENCY : 4.17 Hz**
CONTAINER/ITEM: C17 Radome **DWELL TIME : 120 minutes**



Ch.	Time	Curr Amp	Peak Amp	1st Int	Time/Div	Hexp	Vexp
1	48.64 mS	-0.36 g's	-0.75 g's	-3.65 In/s	131 mS	1	2
2	48.64 mS	-0.21 g's	-0.74 g's	-5.96 In/s	131 mS	1	2
3	48.64 mS	0.03 g's	-1.98 g's	-11.64 In/s	131 mS	1	2
4	38.40 mS	0.61 g's	1.71 g's	15.71 In/s	131 mS	1	2

Accelerometer output: Ch1 - X(long.); Ch2 - Y(trans.); Ch3 - Z(vert.); Ch4 - table input.

Aft side = desiccant port end.

Ambient temperature and humdity.
ASTM D 4169, ASTM D 999, SAE ARP1967.

APPENDIX 4: Test Instrumentation

PRESSURE TEST EQUIPMENT - Test sequence 1 & 6.

EQUIPMENT	MANUFACTURER	MODEL	SN	CAL. DATE
Digtal Manometer	Yokogawa	2655	82DJ6001	N/A

ROUGH HANDLING TEST EQUIPMENT - Test sequences 4 & 5.

EQUIPMENT	MANUFACTURER	MODEL	SN	CAL. DATE
Shock Amplifier	Endevco	2740BT	GB04	Jun 04
Shock Amplifier	Endevco	2740BT	FW23	Jun 04
Shock Amplifier	Endevco	2740BT	FW26	Jun 04
Post Accelerometer	Endevco	2223D	FF67	Jun 03
Data Acquisition	GHI Systems	CAT	Ver. 2.7.1	N/A

VIBRATION TEST EQUIPMENT - Test sequence 2 & 3.

EQUIPMENT	MANUFACTURER	MODEL	SN	CAL. DATE
Servohydraulic Vibration Machine	Team Corp.	Special	1988	N/A
Feedback Hardware Controller	Dactron Corp.	PCI DSP Card Front End DSP Box	2208515 4544828	Aug 04 N/A
Feedback Software Controller	Dactron Corp.	Version 2.1	N/A	N/A
Table Feedback Accelerometer	Endevco	2271AM20	10306	N/A
Feedback Amplifier	Endevco	2775A	EL65	N/A

APPENDIX 5: Distribution List

DISTRIBUTION LIST

DTIC/O
DEFENSE TECHNICAL INFORMATION CENTER
FORT BELVOIR VA 22060-6218

AFMC LSO/LO
WRIGHT-PATTERSON AFB OH 45433-5540

448 MSUG/GBMST
TINKER AFB OK 73145

84 MSUG/GBMSCA
HILL AFB UT 84056-5805

542 MSUG/GBMSCA
ROBINS AFB GA 31098-1670

564 ACSS/GFLC (ATTN: Erna Gomez)
44 GREEN STREET, #100
WARNER ROBINS, GA 31093

516 AESG/LGP (ATTN: Stan Smigiel)
2590 LOOP ROAD WEST
WRIGHT-PATTERSON AFB OH 45433-7142

THE BOEING COMPANY
ATTN: GUY BREDESEN M/C C078-0432
2401 E WARDLOW RD
LONG BEACH, CA 90801-5608

APPENDIX 6: Report Documentation

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (From - To)
28-02-2006-104	Technical, Final Project Report	May 04 - Sept 04

4. TITLE AND SUBTITLE
Development of the C-17 Nose Radome Container

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

5d. PROJECT NUMBER
04-P-104

5e. TASK NUMBER

5f. WORK UNIT NUMBER

6. AUTHOR(S)
Mark W. Boals, Project Engineer
robbin.miller@wpafb.af.mil, DSN 787-3362, Comm. (937) 257-3362

Susan J. Evans, Qualification Test Engineer
susan.evans@wpafb.af.mil, DSN 787-7445, Comm. (937) 257-7445

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Air Force Packaging Technology and Engineering Facility
AFmC LSO/LOP
5215 THURLOW ST, STE 5, BLDG 70C
WRIGHT-PATTERSON AFB OH 45433-5540

8. PERFORMING ORGANIZATION REPORT NUMBER
06-R-04

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

13. SUPPLEMENTARY NOTES

14. ABSTRACT
The neThe Air Force Packaging Technology Engineering Facility (AFPTEF) was tasked with the design of a new shipping and storage container for the C-17 Radome in March of 2004. The new container is designed to replace the wood and fiberglass shell container presently used. The current containers' lack of mechanical and environmental protection as well as handling issues prompted AFPTEF's design of a new container. The new container will protect the Radome both mechanically and environmentally and make it easier to maneuver during worldwide shipment and storage. The CNU-674/E, designed to SAE ARP1967A, is an aluminum, long-life, controlled breathing, reusable shipping and storage container. The new container passed all qualification tests per ASTM D4169. The CNU-674/E container will not only meet the users' requirements but will also provide an economic saving for the Air Force. The savings will be thousands of dollars over the twenty-year life span of the container.

15. SUBJECT TERMS
CNU-674/E, C-17 Nose Radome Container, Aluminum Container, Reusable Container, Design, Test, Long-Life

16. SECURITY CLASSIFICATION OF: a. REPORT	b. ABSTRACT	c. THIS PAGE	17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON	19b. TELEPHONE NUMBER (Include area code)
U	U	U	UU	44	Robbin L. Miller	(937) 257-3362